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Making Dies for Forming Automobile Parts

Design and Construction Explained for the Manufacture of Such Articles as Brake Drums and Step Brackets

BY RICHARD DALE

THERE are three items that may be set down here as being the very first with which the designer of dies should make himself familiar.

They are namely: 1—The stroke of the press and the distance from the bolster plate to the plunger when

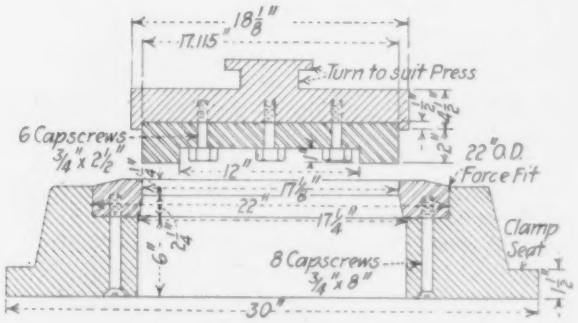

Fig. 1—Brake Drum Blanking Die

the plunger is at the lowest point. 2—The thickness of the metal in thousandths. Then from these he can estimate the best practicable die space or overall height of the punch and die with the punch entered into the die the required distance. 3—The approximate strain on the dies for the different operations. Having these down in his notebook, the designer is now ready to go ahead with the actual drawing up of the dies.

In building brake drum dies, the first one considered here will be the blanking die. Where the blanking diameter is already known this die is built first, but where it is not known the drawing dies are built first and the blanks turned on the lathe and run through

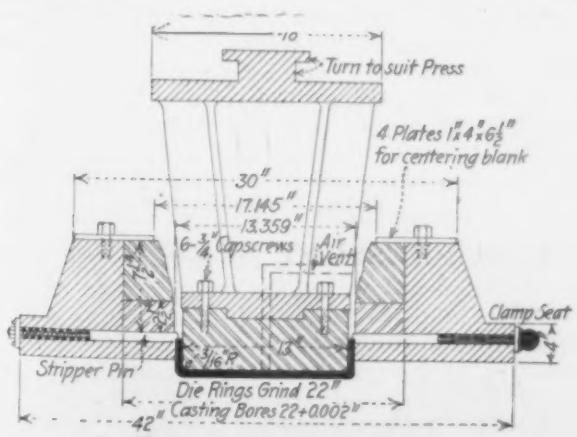

Fig. 2—Brake Drum Drawing Die

the drawing dies, this operation being repeated till the proper size blank is arrived at.

In this instance a 13-in. brake drum is to be made and the blank size is known to be 17⅛ in. This leaves a little stock for the edging or trimming die to remove.

The accompanying drawings are working drawings but the dimensions of the castings can be altered to suit the capacity of the press in which they are to be used. Referring to Fig. 1, an iron casting is made and turned up as shown. The tool steel punch should be a force fit in the counter-bore and care should be taken to have this fit not too tight or unnecessary strain will result. One can make a force fit that can be driven

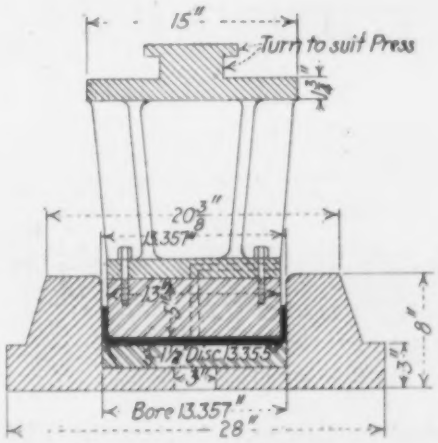

Fig. 3—Brake Drum Flattening Punch and Die

home with a 5-lb. lead hammer and one can also make a force fit that would require 100 tons to force the parts together. The first mentioned is all that is required here.

It will be found convenient and profitable to use the best die steel obtainable for these dies, as the time saved (with the chances for broken dies being practically eliminated) will more than pay the added cost of the better steel. The punch for this die is ground all over except in the counter bore, consequently allowance must be made for grinding. Here is one instance where the better grade of die steel affords a saving that means something in the hurried construction of a die. In using the cheaper grades of die steel, it is found necessary to make considerable of an allowance for shrinkage and warping, this extra stock necessitating much high-priced time to remove on the grinder.

It should not be necessary to allow more than 0.010

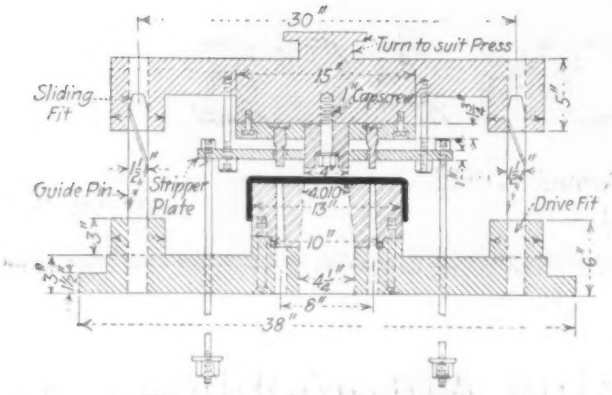

Fig. 4—Brake Drum Piercing Die

in. on the outside diameter and more than 0.005 in. in thickness, as the better grades of die steel will not warp or lose shape to any appreciable extent in hardening. Considerable judgment must be shown, however, in the heating and quenching of the steel, regardless of what kind is used. No sharp corners should be left anywhere they are not necessary, as such have a tendency to increase the chances of cracking in hardening. All holes should be packed tight with asbestos packing before the die is placed in the furnace. This aids considerably in preventing the steel from warping.

In the punch six holes are drilled for ¾-in. diameter cap screws, the counterbore being deep enough to bury the screw heads. The outside diameter of this punch is 0.010 in. smaller than the diameter of the die ring. The diameter of the blank is governed by the

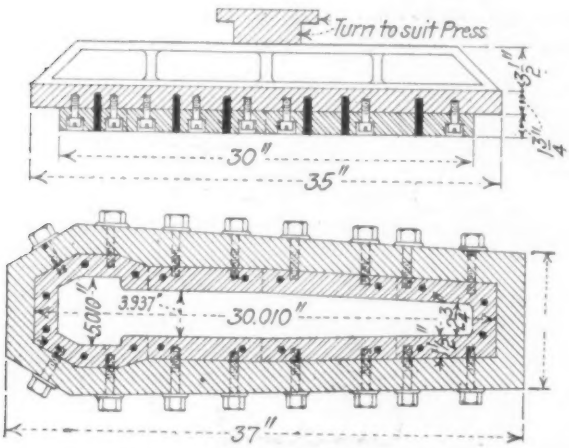

Fig. 5—Step-hanger Blanking Die

diameter of the die ring. The clearance is left on the punch.

The die ring is ground in the bore to ¼ in. straight and then tapered off for clearance about 4 deg. The casting is bored straight but a trifle larger than the largest diameter of the die bore or at the bottom of the taper.

This permits the blank to drop through readily. Provision is made in the casting of the bolster plate (not shown) for removing the blank as it drops.

In hardening—this applies to all dies described, although of course the smaller pieces require less time to heat—the pieces are first heated slowly to a blue and then removed from the furnace and allowed to cool. They are then placed back in the furnace and brought up to about 900 deg. during four hours. After this the temperature is raised a little faster till a temperature of 1450 deg. is reached, this requiring about three more hours. The temperature can be held stationary at this point for an hour and then the dies are dipped flat till they have cooled to about 200 deg. when they are placed in an oil bath which has been heated to 200 deg. After the ring is placed in the oil, the temperature is raised to a degree which will draw the temper to the desired hardness. It is a good practice to allow the die to cool with the oil. The die ring should stand a test on the scleroscope of about 85 or 90. The punch should be somewhat softer, about 75 scleroscopic test.

The Drawing Die

The length of the casting to which the punch for the drawing die is attached is not given in the sketch for the reason that the maximum die space of the punch press on which the die is to be used and the length of the stroke govern this. In examining the brake drum used on the majority of automobiles, one

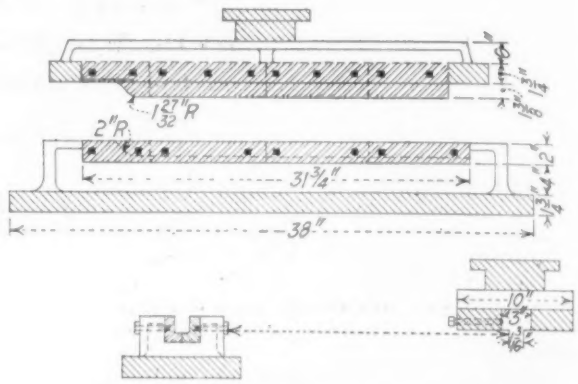

Fig. 6—Step-hanger Forming Die and Punch

will find that the outside of the drum is smooth, as though it had been turned or ground. This finish is obtained in the drawing of the drum.

For instance, it is desired to build a set of drawing dies for a 13-in. drum. The punch is turned, hardened and then ground to the exact size of the drum. The measurement of the drum is inside diameter and height. The metal or stock is 3/16 in. thick. This gives an overall diameter of 13⅜ in. In the operation of drawing, the metal blank is forced through a set of draw rings, the inside diameter of which decreases in size till the bottom ring is reached. This ring gives the diameter to the drum.

In the drawing of the drum, there is what is called the ironing out or squeezing of the blank to give the finish mentioned. This finish is desired only on the outside of the drum. From 0.014 to 0.020 in. is the range of allowances for this ironing out, 0.016 in. being a good average. To get the diameter of the bottom or finishing die ring, from the overall diameter of 13⅜ in. the 0.016 in. allowed for ironing the blank is subtracted which leaves 13.359 in. as the inside diameter of the bottom die ring.

The punch and die rings should be rather hard, testing about 90. The die is made up in this instance of two rings, the top one being 5 in. thick. This ring can be finished to size on the lathe or boring mill and hardened. Instead of grinding, all that is necessary is to polish with emery or polishing cloth. If this ring is hard, it will not wear enough to be replaced till at least 25,000 drums have passed through it. Care must be

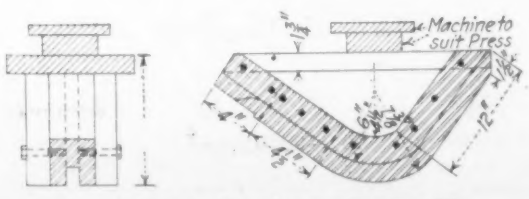

Fig. 7—Punch for Step-hanger Bending Die

taken of course to paint the drum with a good lubricant as it is put in the die.

The clamps shown on top of the drawing die serve two purposes. They act as clamps to hold the die rings

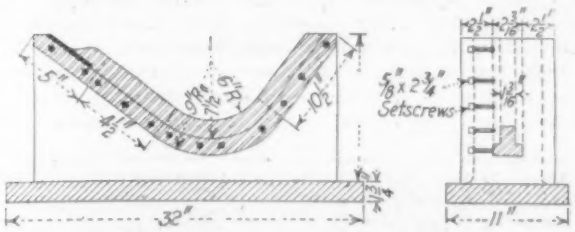

Fig. 8—Step-hanger Bending Die

down (although there is hardly any upward motion) and they serve as gages to center the blank as it is placed over the ring. The degree of slope or angle of these draw rings is not given as one can use his own judgment just so long as the size is reduced gradually to the finished diameter. The radius at the top of the ring is about ¾ in. and the blank extends over this about ¼ in. About the same allowance is made for grinding on the bottom ring as was left on the blanking die. The drum is stripped from the punch by the strippers which are four in number, permitting it to drop through the bolster plate.

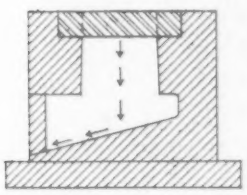

Fig. 9—The Blanking Casting Is Cored to Permit the Blank to Drop to the Sloping Surface and Thence to the Front of the Press

The Flattening Die

When the drum leaves the drawing die, it is bowed considerable across the bottom. This is removed and the drum straightened by the flattening die. The die casting is bored out as shown in Fig. 3 and a tool steel disk ground to a sliding fit is placed in the bottom of the bore. The drum is forced down on this disk and when the punch comes up the drum comes with it and is stripped in the same way as shown in Fig. 4. A beam goes across beneath the press and to this is attached a steel pin turned slightly smaller than the hole in the center of the die casting at the bottom. This beam comes up with the plunger at the same time as the punch and carries the steel disk up with it, thus eliminating any possibility of the drum remaining in the die.

Piercing Die

The drums have a large center hole surrounded by smaller holes. These smaller holes vary in number according to the company for which the drums are being made. Also the requirements vary as to the size of the holes. For that reason no dimensions are given for the small holes shown in Fig. 4. The punches, especially the smaller ones are of high speed steel, as this steel is especially good for punches of the kind when properly hardened.

Step-hanger Blanking Die

The outline of the blank for the step hanger to be made with this die is shown at the bottom of Fig. 5. The punch and die is made up of sections as shown by the dotted lines. The sections are held to the punch casting with dowel pins and fillister head screws and to the die casting with dowels and cap screws. The sections are fitted tight to the castings and the joints are square and fitted tight. The different pieces have allowances for grinding, and the hardening process is practically the same for these pieces as for the brake drum dies, the difference being that the brake drum punches and dies are dipped in a horizontal position and the pieces for the step hanger are dipped endwise. This position in quenching helps to prevent warping.

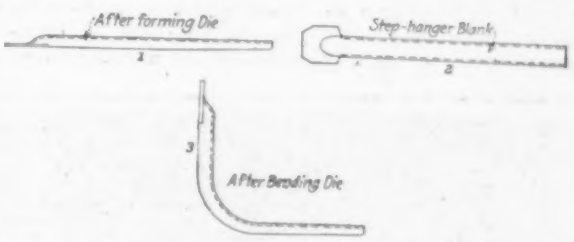

Fig. 10—1, Step-hanger Blank; 2, After Forming Die; 3, After Bending Die

The pieces for the blanking die for the step hanger are drawn to a light straw color and the pieces for the punch are drawn a little softer.

When one piece becomes chipped or otherwise dulled in use, only that piece needs to be taken out and ground. If considerable has to be ground from it, it is brought up to the level of the others by the use of shims. In Fig. 9 the blanking casting is shown cored out underneath to permit the blank to drop on the sloping surface and from there it slides out in front of the press.

The forming die shown at Fig. 6 takes the blank and forms it to the shape shown by No. 2 of Fig. 10. The punch is held in place by set screws on one side only and the die by cap screws on both sides. In the blanking die there are 0.010 in. clearance both ways but in the forming die only the exact thickness of the stock is allowed between the punch and die. The directions given in hardening the blanking die are followed, care being taken not to have the punch hard enough to chip. A hardness test of 75 is hard enough.

The bending die shown in Figs. 7 and 8 bend the piece as shown at No. 3 in Fig. 10. There must be gages or stops bolted to each of these dies to allow the quick, accurate placing of the piece in the die. As these stops are very simple to attach, space is not taken to describe them.

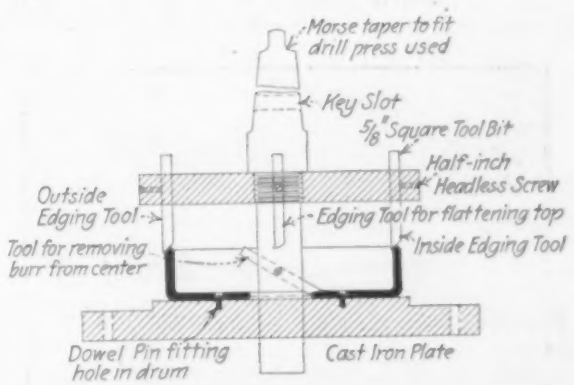
Morse taper to fit drill press used
Key Slot
⅝" Square Tool Bit
Half-inch Headless Screw
Outside Edging Tool
Edging Tool for flattening top
Inside Edging Tool
Tool for removing burr from center
Dowel Pin fitting hole in drum
Cast Iron Plate

Fig. 11—Brake Drum Edging Die. The brake drum edging die shown above is the last operation on the drums. The drum blank is left large so that any irregularities around the edge can be accurately remedied as the drum must be a specified depth. The cast iron base plate shown above is clamped firmly to the table of the drill press used in this operation

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The Stover Mfg. & Engine Co., Freeport, Ill., has issued a new price list to jobbers and dealers, carrying reductions on wind mills, feed mills, ensilage cutters, pump jacks, engines and hardware, nearly reaching the prewar level. This constitutes the fourth reduction made by the company since Nov. 1, 1920.

HAMMER-WELDED STEEL PIPE

A New Product of the National Tube Co., Which Has Developed the Methods of Manufacture

Much larger in diameter than pipe made by the butt-weld and lap-weld processes, hammer-welded pipe is made by bending a steel plate into tubular form with edges overlapping, and then welding the overlapped edges after they have been heated, by hammer-forging them on an anvil block supported on a horn inside the pipe.

In the manufacture of this pipe, plates of best quality open-hearth steel are used, of a grade to give the best results in welding and other manipulations.

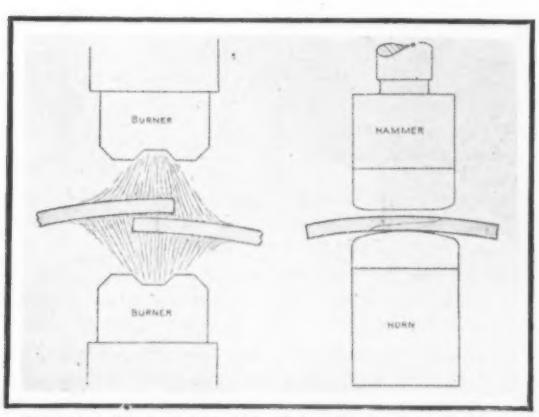
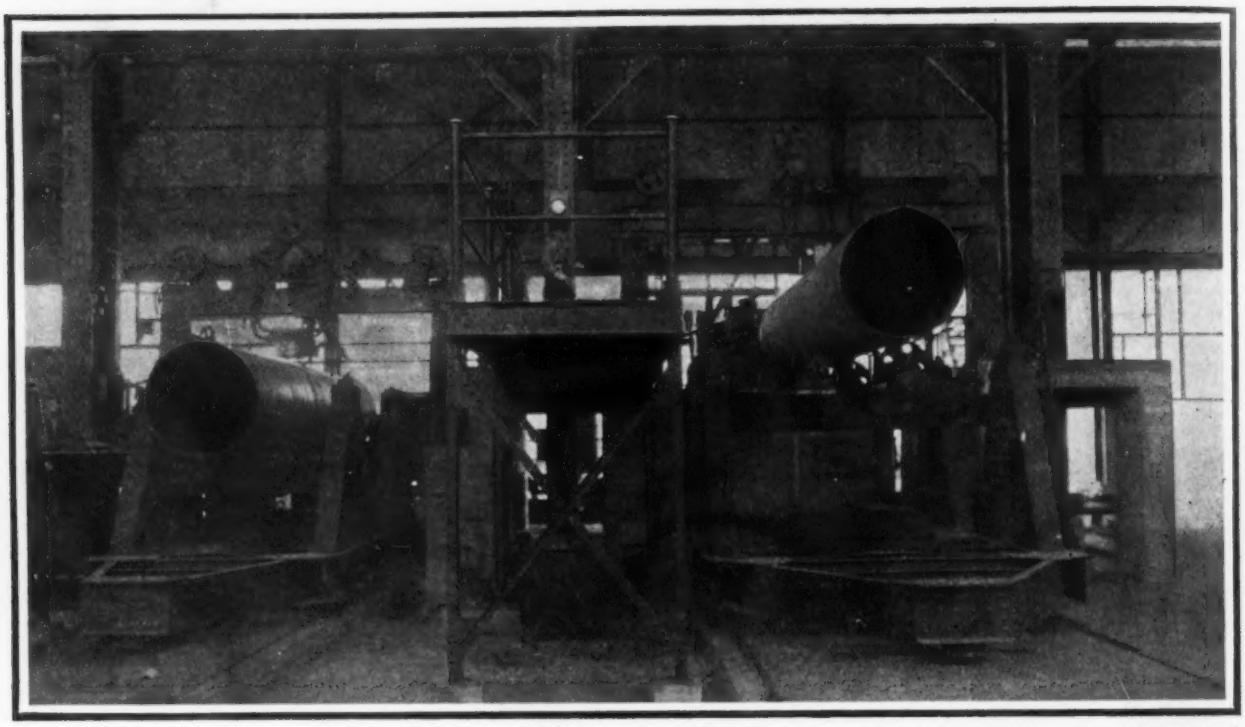


Diagram Illustrating Principle of Hammer-Welding. At left, water gas burners are heating the overlapped edges of the tube, inside and outside. The flame is directed on all surfaces of the portion to be welded, thus insuring uniform temperature. After heating, the hammer, at right, forges the overlapped edges into a strong weld on the anvil block, which is supported by a long beam or horn

The plates may either be bent cold, or heated and bent, depending upon their thickness.

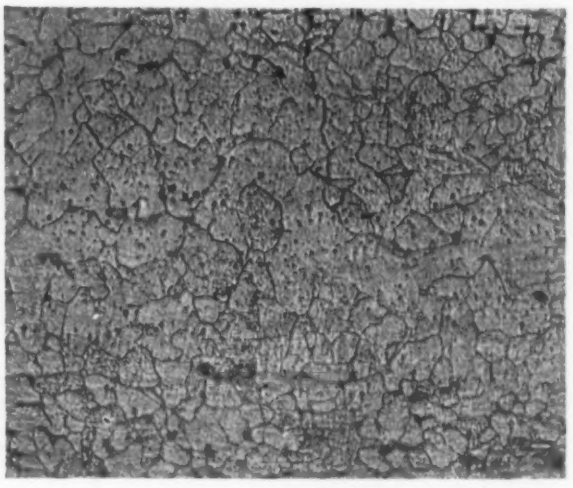
The tubular form is obtained by bending the plate on long horizontal rolls, in much the same manner as plates are bent for boiler shells and tank construction. But they are bent competely around until the edges overlap to the required extent, and the proper diameter of the pipe is obtained. In certain sizes, two or more plates may be used with similar overlapped edges. Sufficient lap is allowed to make sure that the force of the welding hammer will be most effective in welding the edges together.

The rough tube is then taken to the welding machine, where a short section of the overlapped edges is heated to a welding temperature by water gas burners, placed opposite—inside and outside the pipe. The heated portion of the seam is hammer-forged on an anvil supported by a long counterbalanced beam, after which the contiguous portion is heated and welded. These alternate heating and hammer-forgings are continued until the entire length of pipe is welded. The welding machinery is developed to a point which allows the operator to direct every blow with the accuracy of the skilled smith with his sledge. The power hammer can be operated at a high rate of speed, and can be regulated to hit with the varying degrees of force necessary to make a strong weld.



Hammer-Welding Machines on Which the Overlapped Edges of the Rough Tubes Are Heated to Welding Temperature and Hammer Forged

After being welded, the pipe is placed in an annealing furnace and heated, to remove strains and refine the grain. It is then placed on horizontal rolls to round up the pipe, straighten it, and remove scale. After a preliminary inspection, the ends are trimmed to any desired angle or length.



Microphotograph of a Cross Section of a Hammer Weld, Showing the Appearance of the Crystals After Annealing

Each length of pipe is subjected to an internal hydrostatic pressure test, with pressure varying from 150 to 2000 lb. per sq. in., according to the size and

wall-thickness of the pipe and the service for which it is intended. Then the pipe is given a thorough inspection as to surface finish and dimensions, and a protective coating is applied if required by the customer.

Hammer-weld pipe steel is inherently strong and ductile. The minimum tensile strength, taken in either direction to rolling, is 50,000 lb. per sq. in., and the elastic limit is equal to one-half the tensile strength. Strips cut from the plate will stand bending through 180 deg. on a diameter equal to the metal thickness.

The strength and toughness of this pipe is the result of using a high quality steel, and the annealing of the whole pipe after welding. These characteristics are of great advantage in handling, before and during installation, as well as in resisting strains set up after installation, due to expansion and contraction from temperature changes, settling of supports and anchorages, carelessness in back-filling, or other causes.

Engineers and other users of pipe consider the strength of the weld as synonymous with bursting strength. A chain can be no stronger than its weakest link—a line of pipe no stronger than its weakest weld. Investigation has shown that the method of welding used for this pipe produces a weld of higher bursting strength than any other method.

Hammer-weld pipe is made with a range of wall thicknesses from ¼ to 1½ in. Considering the tensile strength of the material, this range of wall thicknesses gives the engineer a wide working basis for computations on those problems where large safety factors must be provided. Sizes from 24 to 96 in. are listed.

BY WATER ROUTE

Jones & Laughlin Steel Co. Inaugurates Plan for Avoiding High Freight Rates

PITTSBURGH, Oct. 31.—The first organized effort by any of the Pittsburgh district steel companies to make regular use of the inland waterways of the country for the delivery of steel was inaugurated last Thursday when a towboat and fleet of seven steel barges loaded with 3500 tons of steel products left the Woodlawn, Pa., works of the Jones & Laughlin Steel Co. for St. Louis and intermediate points. The purpose of the trip, according to officials of the company, is to make use of the Ohio and Mississippi rivers and their tributaries to avoid the excessively high railroad freight rates, which have added so much to the delivered cost of steel products at distant points. It is the intention of the company to establish regular service by the water route. A. W. Herron, Jr., of the Pittsburgh office of the company, and Edward Hughes of its Chicago office, are making the trip and will supervise the delivery of the steel, as well as investigate terminal facilities for future shipments. Included in the shipment are structural steel, plates, pipe, bars, wire products, fencing material, spikes and practically everything manufactured by the Jones & Laughlin company, except tin plate. Stops for unloading will be made at Huntington, W. Va., Louisville, Ky., Evansville, Ind., and St. Louis.

No goods were consigned to customers in Cincinnati because that city was found to have no adequate wharfage and unloading facilities. Several customers of the company in Cincinnati requested that shipments be made to them by the river. The fleet is expected to consume about 10 days getting to St. Louis. Preparations for this trip have been going on for several weeks and, as a result, river interests all along the Mississippi watershed, other steel companies and the United States Army engineers in charge of river work are watching the results with unusual interest.

Motion Pictures of Milling Machine Operations

For use in 27 vocational schools in the United States 10,000 ft. of films have been produced of operations of milling machines made by the Kempsmith Mfg. Co., Milwaukee. The motion picture photographing was the result of an order to the Society for Visual Education from the Government to take motion pictures of different machine tools. The Kempsmith machinery was selected for the picture taking and the pictures portray the assembly of the units, the unit assembly to the machine, the complete assembly, simple milling operations showing close-ups of how the cutter revolves and how the work is held rigid. The ultra-rapid pictures show how the teeth of the milling cutter performs its functions in reaching into the metal and lifting the chip away, showing simple operations and the various jobs done with the dividing head, operations with the attachments, the cutting of gears and how the teeth are made; also many tool and production jobs.

The work was supervised by Sumter Calvert, manager industrial department, Society of Visual Education, Chicago, and W. Kavel, director Dunwoody Institute, Minneapolis.

Merger of Western Car Companies

The recent unconfirmed report of the merger of the Haskell Barker Car Co. with the Pullman Co., Chicago, is borne out by developments of the past week. The Pullman Co. is negotiating the amalgamation which, if effected, will result in the formation of one of the largest railway equipment companies in the country, with assets aggregating approximately $183,000,000. The plan will probably provide for the exchange of Haskell & Barker stock at 75 for Pullman shares at par. Edward F. Carry, president Haskell & Barker Car Co., is mentioned for the presidency of the consolidated company. J. S. Runnells, president the Pullman Co., is proposed for chairmanship of the board.

Southern Coal and Iron Corporation Enters Pennsylvania Anthracite Fields

The Southern Coal & Iron Corporation, Philadelphia, has taken over, under lease, with the option to purchase, the 600-ton electrically equipped Simpson breaker, the Ainsley anthracite mines, the Tipperary anthracite mines, with the 300-ton breaker, all located near Carbondale, Pa. These properties are estimated to contain at least 2,200,000 tons of anthracite coal and are equipped to ship 600 tons of prepared coal daily.

The corporation intends to put these properties into immediate operation, under the direction of Murray B. Courtright, of Courtright, Dimick & Co., coal operators of Philadelphia and New York.

Its property at Rittenhouse Gap, in the heart of the eastern Pennsylvania furnace district, is now shipping iron concentrates, and the company is at present augmenting its plant and expects to ultimately put it on a basis of shipping 500 tons of iron ore concentrates and 600 tons of sand daily from this property.

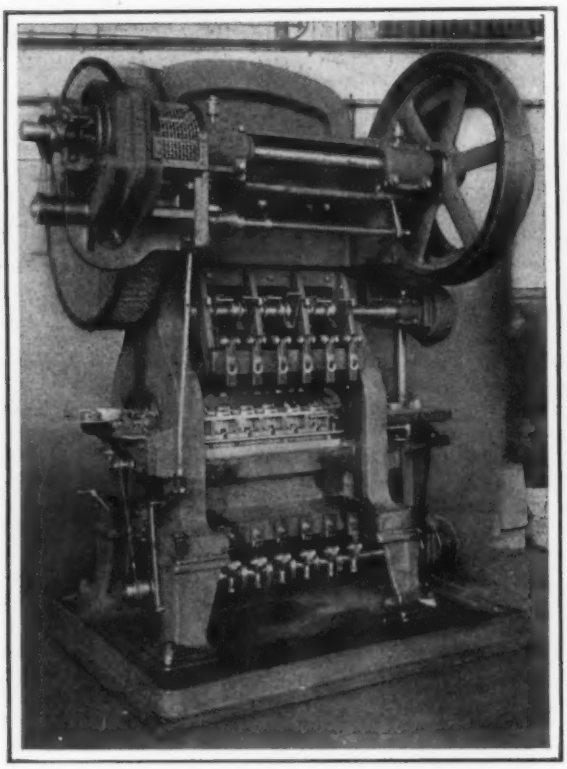
Belief that the new Hudson River vehicular tunnel can be adequately ventilated was strengthened by recent tests at Pittsburgh, conducted by the Bureau of Mines and witnessed by engineers and tunnel commissioners from New York and New Jersey. Eight automobiles, 40 ft. apart, were driven back and forth through the 400-ft. experimental tunnel at speeds of 10 to 15 miles per hr., ventilating apparatus being used to hold the proportion of carbon monoxide below 4 parts in 10,000. Those in the tunnel are reported to have suffered no discomfort.

To fill orders received from the Pittsburgh & Lake Erie and the Erie railroads, the Standard Steel Car Co., New Castle, Pa., has expanded its productive capacity to near normal.

Plunger Press for Multiple Operation

A special plunger press for doing multiple operation work similar to that of an eyelet machine, but capable of heavier stamping and drawing, has been recently developed by the Waterbury Farrel Foundry & Machine Co., Waterbury, Conn. It is shown in the accompanying illustration and is said to be, as far as known, the only machine having separate plungers for each operation that will do heavier work than an eyelet machine excepting the multiple plunger presses of the knuckle-joint type, which because of their construction are relatively expensive.

The machine is built for taking the work already cupped, as in many cases it is preferable to cup and draw the work and then anneal it, as by this method, it is said, the metal can be worked more than without an intermediate annealing. A four-motion feed makes it possible to pierce holes during successive operations



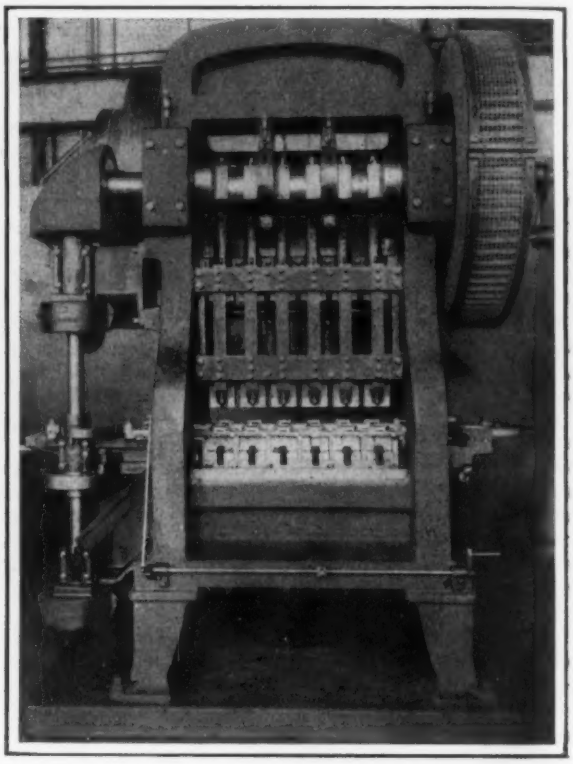
A Four-Motion Feed Enables Piercing of Holes During Successive Operations Which Must Register with Each Other. A system of upper and lower knockouts keeps control of the work

which must register with each other. In connection with the four-motion feed there is a system of upper and lower knockouts that keep control of the work from the first operation until it is dropped out of the machine.

A friction dial feed, mounted on the outside of the right hand upright, delivers the work to the tools through an opening in the upright. The runway on this dial is kept filled with shells while the press is in operation. The shells pass out of the runway and are carried down an incline through an opening in the frame by positive means, to a position in line with the tools, where the main transfer mechanism serving the tools can reach it. A pair of bars parallel to the tools, and having pairs of fingers shaped at their ends to fit the work, is given a motion such that at the beginning of the forward movement of the bars the pair of fingers at the feed-in end of the machine grips a shell and carries it to the first working position under the tools. From this point on, at each advancing movement of the transfer fingers, the shell advances successively to each set of tools and having passed the last set it falls into a chute which conducts it away from the machine. For each finished piece that falls into the chute a shell is carried into the machine; thus all the tools are kept at work continuously and simultaneously.

The gate connections are of the eccentric adjustment type, an eccentric bronze crankpin bushing being so fixed in the connection that a reasonable shortening or lengthening of the connection can be obtained by loosening the clamping screws on the connection cap and rotating the bushing with a pin wrench. Each transfer finger is independently adjustable. The die-bed blocks have a limited amount of adjustment sideways and endways, sufficient to insure the dies lining up with the punches. The strippers and knockouts have independent external adjustments, so that their positions relating to the tools can be changed without disturbing the tools.

The tool spaces and means of holding the tools are generous, considering the work that would be done on the machine. The principle of using independent gates for each set of tools shows to advantage here, it is claimed, in the marked accessibility of the tools, the action of which may at all times be readily observed from every side. The die-bed block, along with the working end of the knockout, can be readily removed by taking out two screws and sliding it out under the



carry bars, the working end of the knockout having a slip joint in line with the bottom of the die-bed block so that as the block is pulled out the knockout disconnects itself. The punch holder is also removable by taking out the two screws holding it to the bottom of the gate.

The machine illustrated has a capacity for shells 2½ in. in diameter by 1¾ in. long. The weight is 21,100 lb. and the floor space occupied 71 x 100 in. Safety devices are provided to prevent damage in case the various mechanisms fail to function properly.

"The Nature of Brass" was the subject of a paper presented by A. E. White, director, Colleges of Engineering and Architecture, University of Michigan, at the regular monthly meeting of the Engineers' Society of Western Pennsylvania, at the William Penn Hotel, Pittsburgh, Tuesday evening, Oct. 18.

The Traf-O-Lite Sales Co., Newark, N. J., recently incorporated to manufacture mechanical devices for automobile service, is having its manufacturing done by the Hygrade Engineering Co., Newark, N. J.

Buffalo Companies Ask Lower Freight Rates

Claim Made That Recent Reduction in Iron Ore Rates Has Brought Some Radical Change in the Competitive Situation, Which Means Disaster if Not Relieved

BY L. W. MOFFETT

WASHINGTON, Nov. 1.—Blast furnace and steel interests in the Buffalo district are seeking lower freight rates on coal and coke. It is urged that they be established to the basis existing prior to June 25, 1918. Making a comparison with ex-lake ore rates to interior furnaces, it is maintained that the rates on coal and coke to the plants of these consumers are disproportionate to those applying on ore to interior consumers and that the spread has been further accentuated by the recent reduction of 28 per cent made on ore shipments from Lake Erie ports to official classification territory through which no benefit is derived by lake front furnaces.

In an effort to arrive at an informal solution of the complaint, Attorney Francis B. James, speaking for the blast furnace and steel interests in the Buffalo district, has addressed a letter to the Interstate Commerce Commission, the Association of Railway Executives and to railroad presidents, proposing a joint conference on Friday of this week or Monday of next. Accompanying the communication from Mr. James is a letter addressed to him by President G. F. Downs of the Lackawanna Steel Co., Vice-President and Treasurer Floyd K. Smith of the Donner Steel Co.; President T. H. Wickwire of the Wickwire-Spencer Steel Corporation; President William A. Rogers of the Rogers-Brown Iron Co., and Vice-President C. A. Collins of the Hanna Furnace Co. They point out the alleged inequities in rates on coal and coke applying to the Buffalo district and ask Mr. James to call them to the attention of those whom he has addressed and "take such steps and institute such proceedings and make such interventions as may be necessary to secure for us the relief to which we are entitled."

Relative Ore and Fuel Rates

It is stated in the letter directed to Mr. James that prior to the late war and down to Federal control, and particularly prior to the general increase of 25 per cent in rates, effective June 25, 1918, the rates as between ore and fuel were fairly well balanced. The effect of that advance, it is stated, was to increase the rate on Superior or Northwestern ore to the head of the lakes 30c. per net ton, equivalent to 33.6c. per gross ton, and equivalent to an average increase of 57 per cent, with no increase in the rates from Lake Erie ports to interior points. The result of this increase is described as throwing an undue proportion of the burden of the increase upon lake front plants. The rate on coal from the Pittsburgh district to Buffalo, it is pointed out, was increased from $1.40 per net ton to $1.70 per net ton, increased on Aug. 15, 1919, to $1.75, while the rate of $2 per net ton on coke from Connellsville, Pa., to Buffalo became $2.60, effective June 25, 1918. A number of competitors, it is stated, at interior points are located close to their fuel supply and their rates were increased much less in the aggregate, while the lake front plants, despite their natural advantage, received no benefit in the way of lowering ore rates. Under the so-called 40 per cent general rate advance of last August, it is set forth, the rate on coal from Pittsburgh to Buffalo and vicinity became $2.51 per net ton and the rate on coke from Connellsville became $3.64 per net ton and the rate on iron ore from Lake Erie ports to Pittsburgh 91c. per gross or 81.3c. per net ton was increased to $1.275 per gross or $1.14 per net ton and the rate of 92c. per gross ton on iron ore from Lake Erie ports to industries in the Connellsville district was increased to $1.44 per gross or $1.29 per net ton and the coal rate from the Reynoldsville district to Buffalo was increased from $1.60 per net ton to $2.36 per net ton, while the ore rate from Buffalo to DuBois and Punxsutawney, in the Reynoldsville coal district, was increased from 70c. per gross ton to 98c. per gross ton, or from 62.5c. per net ton to 87.5c. per net ton. The Buffalo consumers then make a comparison of the recently reduced ore rates with coal rates to Pittsburgh and Buffalo and other points and also show increases they have to pay on Connellsville coke shipments.

Ore and Coal Rates Compared

"Comparing the present rates on iron ore (the recently reduced rates) per net ton with the present per net ton rates on coal, the ore rate from Buffalo to DuBois and Punxsutawney is 26.65 per cent of the coal rate in the reverse direction, the ore rate from Lake Erie ports to Pittsburgh is 39.95 per cent of the coal rate in the reverse direction and the ore rate from Lake Erie ports to the Connellsville district is 43.69 per cent of the coal rate in the reverse direction," it is declared. It is pointed out that this situation obtains despite the fact that the cost of transporting coal and ore is substantially the same and that the present price of ore at Lake Erie ports is practically double the present price of coal at mines.

"The recent reduction of iron ore rates of our competitors at interior points by restoring the iron ore rates to what they were prior to June 25, 1918, without making a corresponding restoration of the rates on our fuel has brought about such a radical change in the competitive situation that same means disaster to our industries," the Buffalo interests declare.

In conclusion they say:

"While the prices of our products have been rapidly declining and are approaching pre-war prices, the rates on our raw materials are at their peak and out of proper adjustment with that of our interior competitors. Competition was never more severe and promises to continue to be severe, and therefore delay in securing the relief to which we are clearly entitled will be a severe blow to our industries and to the city of Buffalo and its vicinity."

In his letter, Mr. James says the 40 per cent increase in rates greatly widened the competitive spreads on fuel, raw materials and finished products between producers who are near from those who are more distant from the sources of fuel and raw materials and the markets for finished products. He declares that the "present exaggerated spread between the long and short hauls is unjust and unreasonable and a reduction of this competitive spread will tend to restore competitive relationships between producers and inure to the benefit of the consumers and the carriers."

Rates Must Come Down

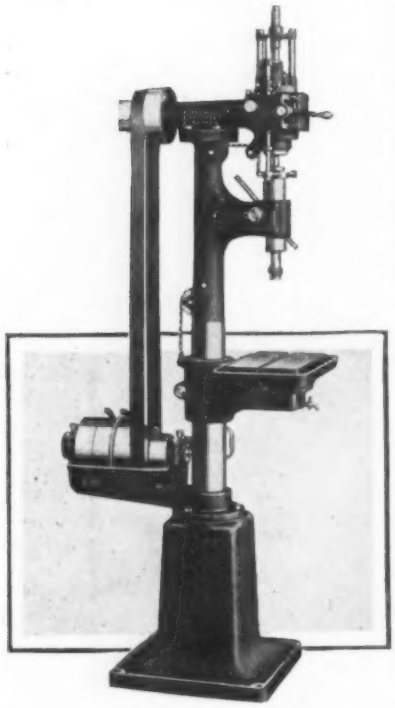
Mr. James quotes Commissioner Potter in connection with the recent decision lowering rates on agricultural products wherein the commissioner, referring to rates generally, says they must be gotten back to the proper relation to other things, and "they must come down, and whatever is necessary to bring them down must be done." Mr. James also quotes from a sworn statement of R. N. Collyer, chairman of the Trunk Line Association, made to the commission in connection with the recent application to lower ore

rates in which Mr. Collyer said that "The iron and steel industry has gone through a period of severe price reduction (comparable, perhaps, to that of agricultural) and its prices are substantially on pre-war basis," and it was added that if the ore is to be moved at rates which recognize the deflated prices obtainable for its products so as to seasonably assist the industry in its efforts toward recovery the rates must be made effective as quickly as possible.

"The reasons given for the restoration of the rates on ore to the interior iron and steel producers are precisely the same that require a restoration of the rates on coal and coke to the producers of iron and steel at Buffalo and vicinity."

New Line of Automatic Tapping Machines

A line of automatic tapping machines of the type illustrated, and including also bench and belted motor drive designs, has been developed recently by the Cincinnati Hy-Speed Machine Co., Cincinnati. They are being marketed under the name of Hy-Speed and are built with from 1 to 3 spindles in two sizes, the maximum capacities being ½ and ⅞ in., respectively, in steel.



When Set at Full Automatic the Spindle Automatically Reverses at Each End of Travel

Among the features are the patented spindle lead and automatic reversing mechanism. With the use of the spindle lead device the tap is said to be brought forward and returned in a positive way entirely free of the operator, tapping holes accurately and without danger of stripping the thread or breaking the tap. A half turn of the stop plunger at side of the control handle changes the machine from semi to full automatic. When set at semi-automatic the spindle travels forward, reverses automatically and stops at the end of the return stroke. To start forward again, the operator pulls down on the control lever. When set at full automatic the stop plunger is withdrawn, the spindle then automatically reversing at each end of its travel. The spindle can be stopped at any point, reversed and again brought forward by the use of the control lever.

The machines are regularly furnished for right hand tapping, although an attachment can be supplied for left hand tapping. Adjustable trip dogs with limit stops on the trip rod regulate depth of tapping. The chuck is driven by a clutched end on the spindle and is locked in position. S. K. F. ball bearings are used throughout. Tables are furnished with a No. 28 B. & S. T-slot, and pump and tank are attached to the base.

Ore Loading and Unloading Record

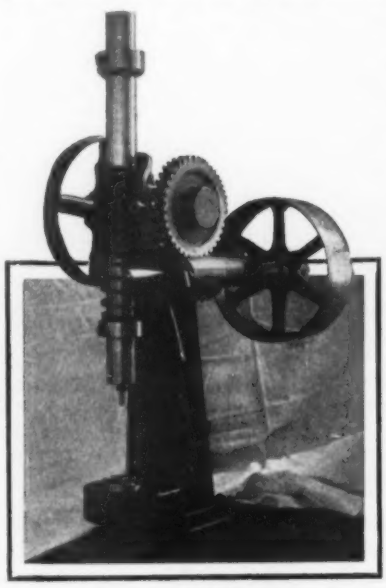
Loading 1000 tons of iron ore at the rate of 1.3 minutes, the Great Lakes steel freighter D. G. Kerr broke all loading records one day last month. The former record, which stood for 10 years, was 1000 tons in 2.7 minutes, made by the steamer Corey. The D. G. Kerr made the recent record by loading 12,382 gross tons in 16½ minutes at the Two Harbors, Minn., docks of the Duluth & Iron Range Railroad. She was at the dock only 19 minutes. The ore cargo was poured into the Kerr through 35 hatches. The steamer is 600 ft. long, 60 ft. wide and belongs to the Pittsburgh Steamship Co., a subsidiary of the United States Steel Corporation. When the cargo reached the company docks at Conneaut, another record was broken in unloading, the 12,382 gross tons having been removed in three hours and five minutes, at the rate of 1000 tons every 14.9 minutes, as compared with the previous record of the P. A. B. Widener in 1912, when the unloading rate was 1000 tons every 16 minutes.

Clean, Cold Producer Gas from Bituminous Coal

Following an inspection of the Atha works of the Crucible Steel Co. of America, at Harrison, N. J., members of the metropolitan section of the American Society of Mechanical Engineers met at dinner at the Downtown Club, Newark, N. J., and then heard a paper, under the above title, read by C. F. Kaufman, gas engineer of the Atha works. The speaker laid great stress upon the necessity for thorough removal of tar from the gas, tracing the development of the successful gas producer from its inception, 60 years ago, through the stages of bituminous gas cleansing through tar removal, 20 years ago, and the more recent production of a cold gas from soft coal.

Bench Type Power Broaching Press

A power broach press of the bench type as shown in the accompanying illustration has been recently placed on the market by the American Broach & Machine Co., Ann Arbor, Mich. The machine is intended for operating push broaches, for pressing mandrels in and out, for pressing bushings and for many operations usually performed by hand.



The Stroke Is Adjustable by Setting the Collar on Top of the Ram

Operation is by a 2½ in. belt on a 10 in. pulley which revolves in one direction continuously. The power is transmitted through a 6 pitch worm and worm gear of 30 to 1 ratio, and thence through a steel pinion and rack. The ram is 2 in. in diameter and has the rack teeth cut on the back of it. The stroke is adjustable, the worm being arranged to disengage automatically at the end of a predetermined stroke by setting a collar on the top of the ram. The return of the ram is automatic and is accomplished by means of a weight and cord, the cord being wound in a groove in the hand wheel. The machine has a stroke of 14 in. The bore in the table is 2½ in. and is central with the ram.

Steel bars imported into France for manufacture into springs now are dutiable at the pre-war rate, provided the conversion is made within a period of six months from the date of importation.

Electrical Development in Steel Mills

Report of Progress During Past Year—Extension of Electric Drive the Main Feature—Advance in Control Equipment

BY R. B. GERHARDT*

DUE to the present business depression very little is to be said in regard to new installations of main drive equipment. At the various meetings of our association sections, however, much valuable discussion and data have been submitted with respect to main drive equipments now in operation, which will undoubtedly lead to further application of the electric main roll drive, as conditions warrant the building of additional mill equipment.

The paper on review of costs of rolling steel, with discussions,† gives us actual data showing the benefits to be derived by electric reversing mill drive over steam drive, and this undoubtedly shows that the electric drive is the one for most economical operation. Coupled with the savings as indicated in this paper are the possibilities of a saving in labor for operating the electric driven mill, made possible by the easier manipulation with electric control.

It is entirely possible and perfectly feasible to operate an electric driven blooming mill with two men in the pulpit, against a minimum of three required by steam operation. This has been tried out on the Sparrows Point 40-in. blooming mill and operated successfully since last April, without slowing up the operation of the mill in any respect whatever. Carrying this idea further, in the case of the 60-in. reversing universal plate mill at Sparrows Point, two operators handle this mill in place of a minimum of four required at other plants with steam operation.

Since last year the following new main roll drive equipments have been put into operation or placed on order:

Direct Current Motors with Ward Leonard Control

I—28-in. combination rail and structural mill. Tata Iron & Steel Co., Jamshedpour, India.

Double unit motor rated 6,300 hp., 80 r.p.m. continuously; 15,500 hp., 75 r.p.m. maximum. Maximum speed 120 r.p.m. AC power—3000 volt, 50 cycles; direct current voltage, per armature, 600. Induction motor driving the flywheel set is rated 16 pole, 6500 hp., 375 r.p.m., 3000 volts, 50 cycles.

II—28-in. rail and structural finishing mill, Tata Iron & Steel Co., Jamshedpour, India.

Single unit motor, 1400 hp. continuous capacity, at 80 r.p.m. with speed control to 115 r.p.m. Maximum capacity 3000 hp. at 80 r.p.m. AC power supply, 3 phase, 50 cycle, 3000 volt.

Induction Motors with Speed Regulating Set

(All at Illinois Steel Co., Gary, Ind.)

I—20-in. hot strip mill. 5500, 4400, 3400 hp., 170, 136, 105 r.p.m., 6600 volt, 25 cycles.

II—20-in. hot strip mill. 2070, 1650, 1205 hp., 235, 187.5, 137 r.p.m., 6600 volt, 25 cycles.

III—12-in. hot strip mill. 2750, 2240, 1750 hp., 262, 214, 167 r.p.m., 6600 volt, 25 cycles.

IV—12-in. hot strip mill. 750, 625, 450 hp., 360, 300, 220 r.p.m., 6600 volt, 25 cycles.

V—12-in. hot strip mill. 750, 600, 440 hp., 473, 375, 278 r.p.m., 6600 volt, 25 cycles.

VI—12-in. hot strip mill. 300, 225, 165 hp., 335, 225, 165 r.p.m., 6600 volt, 25 cycles.

Direct Current Motor Drives for Continuous Hot Strip Mills, Trumbull Steel Co., Warren, Ohio

Stands	Hp. (Continuous)	Speed (R.P.M.)
1, 2, 3, 4	1250	175 to 350
5, 6	1250	175 to 350
7	800	200 to 400
8	800	231 to 462
9	800	256 to 512
10	800	275 to 550

This 14-in. mill will consist of 10 stands, all driven by adjustable speed direct current motors as listed above. Power is derived from two 2200-kw. synchronous motor generators. The control requirements for this mill are most exacting. The several stands of the mill are located close together and the steel is rolled at an unusually high speed, making it necessary to provide for very close adjustment of the speeds and for maintaining these speeds with wide fluctuations in load to prevent the development of loops or stretching of the steel between the stands.

Additional Mill Drives

Plant	HP.	R.P.M.	Voltage	Frequency
Kansas City Bolt & Nut Co...	450	440	2200	60
National Pressed Steel Co.....	1000	705	2200	60
Knoxville Iron Co.....	800	880/490	2200	60*
National Enameling & Stamping Co.	2000	235	2200	60
French Co.	300	365	500	50
French Co.	300	365	500	50
Marine et Homecourt, France.	5750	500	3000	50
Marine et Homecourt, France.	3200	500	3000	50
Cia Electro Metallurgica Brasileira, Brazil	500	500	6000	50
Cia Electro Metallurgica Brasileira, Brazil	500	500	6000	50
American Brass Co.....	500	450	2200	60
American Brass Co.....	400	360	2200	60
American Brass Co.....	400	360	2200	60
American Brass Co.....	400	600	2200	60
American Brass Co.....	600	600	2200	60
American Tube & Stamping Co.	400	360	440	60
American Tube & Stamping Co.	300	360	440	60
Harrison Radiator Corporation	350	250	440	25
Cyclops Steel Co.....	400	720	2200	60
Interstate Iron & Steel Co.....	2000	250	2200	60
	2000	150		
Simmons Mfg. Co.....	350	360	440	60
	350	240		
Simmons Mfg. Co.....	750	225	440	60
	750	168		
Weirton Steel Co.....	1500	514	6600	60
	1500	237		
Weirton Steel Co.....	600	720	6600	60
	600	360		

*Rotary converter speed test.

Replacement of Engines by Motors

The installation of the blooming mill motor in place of the engine at Steelton, Pa., is an epoch making event for this country. In 23 days from the time the engine was taken out of service, the electric drive was put into operation. On the third day of electric operation the mill rolled 1006 tons on a turn, which was within 40 tons of being the record for the engine, and since refinements and adjustments have been made to the motor equipment, the turn record now stands at 1520 tons.

A most important event was the replacement of the twin tandem reversing engine, which drove the first finishing stand of the Lackawanna rail mill, by a reversing motor equipment. This equipment was the first main roll electric reversing drive sold in this country to replace an engine. It was sold in 1917 and delivered in 1918, but conditions at the Lackawanna plant were such as to make it inexpedient to install the equipment until this year.

This motor unit has the highest continuous capacity (8000 hp. at 50 deg. Centigrade temperature rise) of any electric reversing drive in the world. It was designed to roll the first four of the last five passes on a 105-lb. rail section at the rate of 240 gross tons per hour. The last pass is made in an adjacent mill driven by a separate engine. The maximum production so far has been at the rate of 198 gross tons per hour of 105-lb. rails, which exceeds all previous tonnage records on this mill. A particularly interesting feature is that this rate of rolling was made with the last finishing stand disconnected from its engine and connected to the first finishing stand, so that the motor was

*Electrical superintendent Bethlehem Steel Co., Sparrows Point, Md. This is the report, substantially in full, submitted by Mr. Gerhardt's committee on electrical development to the Association of Iron and Steel Electrical Engineers, in convention at Chicago.

†THE IRON AGE, Oct. 20, page 998.

driving both stands and rolling five instead of four passes.

Power House Equipment

No steam turbine units of unusual design or larger capacity have been produced during the past year. The present largest units are the 60,000-kw. Westinghouse three-cylinder machines, and 45,000-kw. General Electric single-rotor machine. Of course, this size unit is more popular with the central station company than with the steel plant, for at present the largest units used in steel plants are not over 20,000 kva. The General Electric Co. is still carrying on development on the Lungstrom turbine, and is arranging to install in the near future one of the mercury turbine sets for trial on commercial service. These outfits will be watched with interest.

For the steel plant, the gas engine is still a prime mover to be seriously reckoned with, as thermal efficiencies equal to those of the best steam turbine units are easily attainable with this machine, and the present development makes it possible to obtain in a single unit a capacity of 4000 kw., which is considerably more than with the older units.

It has also been successfully demonstrated that a gas engine installation can be operated from a single furnace in blast by making use of a gas holder and certain automatic regulating valves. At Sparrows Point, since last March, from two to four gas electric units, depending on the load requirements, and two 47 and 84 by 60-in. gas blowers have been operating, with only one 500-ton furnace in blast.

As the development of super-power systems is the tendency of the day, it is to the big advantage of the steel plant to take an active interest in this work. We have long studied the possibilities of increasing the load factor on our power house generating equipment, and those of us who develop electric power from blast furnace gas or waste heat can appreciate the value of inter-connection, where it will be possible to maintain full output on the generating station during week ends and periods when the mills are idle, and the furnace gas and heat are wasted.

Frequency as a Factor

The general question of 25 vs. 60-cycle equipment has been discussed thoroughly at some of our section meetings, and the fact still remains that there is not a clear-cut solution to the question. Present developments show, however, that there is under construction for the Tennessee Coal, Iron & Railroad Co. a 7000-kva. frequency changer which will tie a 25-cycle plant to a 60-cycle turbine operating in conjunction with purchased power from the Alabama Power Co. This, we believe, will be the largest frequency changer used in steel mill service. It would seem rational, however, to assume that, if generators can be built up to 45,000 kw. capacity in a single unit, there is still further development possible on frequency changer sets.

Electric Heating

The use of electric energy for a heating agent is being more and more exploited in the steel plant, and the following are some of the more recent applications:

a. Electric heated tin pots for the tin mills. With these a more uniform heat regulation and very efficient operation are obtained.

b. Electric heated pots for babbitt metal. With such equipment it is more nearly possible to have the steel mill shop duplicate the bearings obtained from the original manufacturer, as this method of heating babbitt metal has been used by the motor manufacturers for some time past.

c. Electric heated ovens for heat treating and annealing result in more uniform and efficient operation.

d. Electric heated core drying ovens for the foundry.

e. The electric heating of stock for the manufacture of bolts, rivets and spikes is being worked out as a refinement of the electric rivet heating principle, which is now a commercial success.

Electric Furnaces

An event of considerable importance to those interested in electric furnace applications was the tapping of the first heats from the two 40-ton, 3-phase Heroult furnaces at the Government armor plant, Charleston, W. Va., on February 2, 1921. These furnaces take molten steel from basic open-hearth furnaces and complete the refining, producing a very high-class steel. The electrical apparatus and, indeed, the whole equipment has functioned very successfully.

Another practical demonstration in electric furnace operation was the recent completion of a run in a 4000-lb. induction furnace at the Pittsfield works of the General Electric Company when the 555th heat was poured. The service is peculiarly hard on the linings, as high silicon steel scrap is melted on a basic lining with excellent results. It is thought that these experiments demonstrate that the solution of the induction furnace lining has been found, and the manufacture of special steels, especially where molten steel can be charged, is an unusual field for this furnace.

Control Equipment

In the control field there has been probably more development in the past year than in any other single line. It is now possible to obtain a steel mill controller with contacts and arc chutes having such life, that it is no longer the regular week-end duty of the repairman to renew those parts on the severe service applications. Some plants have found the life of such parts to be as much as 15 to 20 times that of former designs. The newer design of contactor has several radical departures from the older types, in that all parts as far as possible are made of pressed steel or punchings, which are lighter in weight and very uniform, instead of castings, which were heavier and required considerable machining. The result is a quicker operating switch of better reliability. The development of the voltage drop relay scheme of current limit control results in some advantages as follows:

a. Only one type of relay and only one size of coil required for all sizes of motors designed for the same voltage. This is a great advantage from the user's standpoint, because it simplifies repair parts.

b. The relay possesses a slight time lag, which gives the effect of decreased current limit setting when accelerating light loads.

c. Separate mounting of relay eliminates any possibility of trouble due to failure of insulation between relay and contactor.

d. Relay contacts are vertical and normally closed, so are affected by dirt to the least possible extent.

e. Relay contacts never break a circuit.

f. Relays can readily be protected by an inclosing cover.

g. The scheme provides a means for the elimination of interlocks.

Yard Electrification

Although the electrification of the steel plant railroad yard is in the early stages of development and, as a matter of fact, is hardly beyond the stage of investigation, it would not be advisable to conclude this report without mentioning the fact that these investigations point out that probably the greatest single field for electrical development in the industry at the present time is the electrification of the steel plant railroad yard.

Miscellaneous Developments

The development of the wireless telephone has reached a stage where the commercial possibilities seem to be very great, and the wide-awake steel plant engineers seem to be very keen in their desire to exploit its use, particularly in steel corporations with plants scattered throughout the country, which might be kept in constant touch with each other by its use.

The greatly reduced operations in the steel industry of to-day make it necessary to cut down in every way possible the cost of production, and this factor will be perhaps greater than all other items together for increasing the field of electrical development in our plants. We are making a reputation for ourselves as well as our association, not by resting on our laurels while business is slack, but by putting our best efforts forth on this development work.

Synthetic Foundry Pig Irons in Germany

Methods of Production During the War to Overcome Scarcity of Low Phosphorus Irons—Their Properties—Charcoal Iron

AN article, describing how one German plant overcame the scarcity of low phosphorus pig iron during the war, is published in *Stahl und Eisen*, June 30, 1921. The research department of the Rombacher Hütte in Coblence started with the Lorraine minette ore, which is rich in phosphorus, with the purpose of making foundry iron as low as possible in phosphorus and sulphur to replace hematite, charcoal and low carbon foundry irons. In ordinary basic Bessemer steel there is a source of material that comes very close to the very best foundry iron in regard to phosphorus, sulphur and purity, being usually about 0.08 per cent phosphorus and 0.04 per cent sulphur. The needed amounts of manganese and silicon can be added without difficulty by means of ferroalloys. The question, therefore, is whether there are ways and means of adding the large amounts of carbon needed up to 3 per cent and even 4 per cent with certainty and economy.

Some experiments regarding the carburizing of low carbon steel to such a high degree were carried out at Rombach in 1907 by the author of the articles, J. Bronn, working on open-hearth metal, and endeavoring to carburize and deoxidize the bath by using liquid iron saturated with carbon. The production of the iron-carbon alloy was carried out originally in a 3½-ton electric furnace, which was charged with liquid basic Bessemer metal, and additions made of ground electrodes and lime. Great care was taken that no Bessemer slag entered with the charge, to avoid rephosphorization. The ground electrode carbon was practically free from phosphorus 0.008 per cent, but contained 1.11 per cent sulphur. The metal obtained contained 3 to 4 per cent carbon, and an average slag showed phosphorus, 1.09 per cent; MnO, 3.58 per cent; CaO, 49.46 per cent and sulphur, 0.44 per cent. A photomicrograph of such an iron made in February, 1914, and containing carbon, 3.52 per cent; manganese, 0.56 per cent; phosphorus, 0.079 per cent; sulphur, 0.04 per cent, and silicon, 0.03 per cent, shows normal structure of pearlite and cementite. The metal cast in sand showed close fracture and uniform structure. All the carbon was combined.

Similar metal was also made by melting small scrap in the electric furnace. This naturally took a large amount of power, and for larger plants charging with fluid metal is preferable. These experiments showed one method of carburizing the metal, but as only one small furnace was available, and due to war conditions sufficient power could not always be obtained, other methods of production had to be sought.

According to the current theory of blast furnace practice it is assumed that the metal reduced from the ore falls in drops through the hot glowing column of coke and so becomes saturated with carbon. This also happens if low carbon steel scrap is melted in a cupola. In order to see clearly what would happen a large series of runs was made at Rombach. An ordinary foundry cupola was used of about 37½ in. diameter. It was charged with two tons coke to 7¾ in. above the twyers. After the blast was put on more coke and 350 lb. burnt lime was charged. Then charges were given of 1100 lb. structural steel scrap, 200 lb. coke and 66 lb. lime and, with the first five tons scrap, 900 lb. of 10 per cent ferrosilicon was charged. A great deal of slag was produced, about three times the usual amount, which was acid and gave SiO_2, 44 per cent; CaO, 33 per cent, and 20 per cent alumina and ferric oxide. The first tap of 5 tons had the following analysis and showed a white fracture: C, 2.80; Mn, 0.22; P, 0.21; S, 0.12, and Si, 0.75. Of the added silicon, 95 per cent was found in the metal, and some was found in the next cast, so that the loss was not great. Another run was made with no ferrosilicon in the charge. When tapping 110 lb. of 75 per cent alloy in lump form was added in the ladle. The amount and kind of slag were about the same as before. The metal was cast in three beds, and sampled separately to see whether the metal was homogeneous. The results were:

	Carbon Per Cent	Manganese Per Cent	Phosphorus Per Cent	Sulphur Per Cent	Silicon Per Cent
a	2.90	0.15	0.11	0.12	0.60
b	2.95	0.16	0.16	0.11	0.67
c	2.70	0.22	0.13	0.11	0.70

The run had to be stopped because the shell of the cupola about 20 in. above the twyers was a bright red. The cupola was then lined with foundry ladle brick, the coke charge raised, the throat made smaller, thereby increasing the contact between iron and coke. Also it seemed better to use heavier scrap, which would not melt quite so quickly. The coke used contained 8.74 per cent ash, which in turn had 31 per cent SiO_2 and 0.5 per cent phosphorus. In the newly lined cupola about 25 tons of billet ends were melted in one shift and tapped in eight casts. To taps 1, 2, 7 and 8, 530 lb. of 10 per cent ferrosilicon were charged in the furnace; to taps 3 to 6, 77 lb. of 75 per cent alloy were added in the ladle. The analyses were as follows:

Tap	Carbon Per Cent	Manganese Per Cent	Phosphorus Per Cent	Sulphur Per Cent	Silicon Per Cent
1	2.75	0.22	0.12	0.30	0.82
2	3.20	0.29	0.13	0.27	0.52
3	3.20	0.19	0.13	0.22	0.84
4	2.70	0.17	0.12	0.18	0.84
5	2.90	0.20	0.20	0.24	0.80
6	3.35	0.18	0.14	0.21	0.79
7	3.20	0.25	0.08	0.17	0.53
8	3.15	0.25	0.08	0.17	0.30

The slag was abundant in volume, although not so great as in the previous runs. The slags from the fifth and seventh casts showed:

Cast No.	SiO_2 Per Cent	CaO Per Cent	Fe_2O_3 Per Cent	Al_2O_3 Per Cent
5	35.6	24.0	22.6	18.3
7	40.1	27.8	12.2	18.0

As the iron seemed rather stiff about 1 lb. of aluminum was added in each foundry ladle. The iron ran freely and filled the molds well. The charge was put at the following: 26 tons scrap, 11 tons coke, 2 tons lime, 1 ton 10 per cent ferrosilicon, 300 lb. 75 per cent ferrosilicon, and 9 lb. aluminum. The brick lining was very badly attacked. This factor, together with the high coke consumption, and above all the increase in sulphur, notwithstanding the high lime charge, prevent this process showing much promise. The high coke consumption is due to the difficulty of melting low carbon steel scrap and the high sulphur comes directly from the coke.

If the coke consumption could be considerably reduced then at one blow all these difficulties and disadvantages would be removed. Molten low carbon steel is available from the steel works and, if the cupola could be charged with molten iron, the whole burden of melting would be removed and only the carburizing remain. On these grounds was based the following method of working. The first test was made in a pipe about 6½ ft. long and 3 ft. 3 in. diameter. This was lined with one layer of ladle brick and provided with a bottom and a tap hole. Before each test a fire was made, the whole pipe filled with coke, and the whole heated as hot as possible. Then with the tap hole closed, molten low carbon basic Bessemer steel was poured into the glowing column of coke in the pipe. In order to prevent funnels being formed in the coke the ladle was moved slightly during pouring, and coke thrown continuously into the stream of metal. Either during the pouring or shortly before ferrosilicon and

manganese were added. About five minutes after the end of pouring the 5 to 6 tons molten steel, the tap hole was opened, and the metal poured into molds. The resultant metal was carefully examined, not only chemically but microscopically to be sure the carbon was really combined, and not merely mechanically mixed with the iron. The results on several casts were as follows:

Carbon Per Cent	Manganese Per Cent	Phosphorus Per Cent	Sulphur Per Cent	Silicon Per Cent
1.95	0.24	0.05	0.08	0.07
1.70	0.53	0.15	0.08	0.60
1.70	0.58	0.19	0.09	0.80
2.52	0.53	0.10	0.08	0.36

Similar results have been obtained with the many tests carried out with the apparatus over a space of time of 8 months. Only traces of mechanically included carbon have been found, almost always the carbon is all combined. The iron is remarkably tough, and shows a martensitic structure. It will be noticed the phosphorus is increased. A careful investigation showed this came either from basic Bessemer spittings included with the coke, or slag carried over by the metal.

The lessons of these experiments were that the metal must be as hot and fluid as possible, and the coke column thoroughly heated throughout its whole length. There is then no danger of the metal freezing. This is helped by the fact that with increase in carbon the metal becomes more fluid at a given temperature, due to the freezing point being lowered.

With these points in mind a furnace was built near the foundry ladle track similar to a cupola. At the height of the charging floor the furnace was provided with a large charging door on one side through which the coke was added, and on the other side with a runner for the molten metal. The furnace was arranged with two series of tuyeres and oil burners, through which blast could be blown for heating the coke or tar if necessary. A forehearth was provided of about 25 tons capacity, which could be heated with two tar-burners. In front of the tap hole of the forehearth lay the casting bed, which on account of lack of space could only hold 15 tons.

The method of working is the following: First comes the heating of the forehearth, the hot gases passing up the shaft in which by this time coke has been charged. As soon as the forehearth and column of coke are hot enough the first available ladle of basic Bessemer steel is brought over, raised by the crane and slowly poured down the runner, the charging door being closed. The metal works down into the forehearth where it is mixed. According to the temperature of the metal and condition of the casting bed the metal remains a shorter or longer time in the forehearth. Sometimes the process is worked with the forehearth taphole open, so that the metal simply flows through it. Even in such cases the metal is sufficiently uniform, the difference in carbon between the first and last pigs being only 0.20 per cent. As soon as the metal is cast the refilling of the shaft is commenced and the furnace prepared for the next cast. Metal carburized with coke in this way contains usually 2.6 to 2.8 per cent carbon, and corresponds to the so-called low carbon special iron. Typical analyses show:

Carbon Per Cent	Manganese Per Cent	Phosphorus Per Cent	Sulphur Per Cent	Silicon Per Cent
2.54	0.27	0.08	0.08	0.04
2.74	0.36	0.07	0.08	0.24
2.80	0.37	0.12	0.08	0.14

The remarkable toughness of this material is due to the fact that the metal is carburized at comparatively low temperatures.

This method may also be used for producing an iron similar to the best of all foundry irons, namely, cold blast charcoal iron, by replacing the coke column with charcoal alone, or charcoal with some coke. Tests were first made with the pipe described before working on 4 to 6 tons of metal. In general the metal produced with charcoal contains 3 to 3.5 per cent carbon. Analyses are given below:

Carbon Per Cent	Manganese Per Cent	Phosphorus Per Cent	Sulphur Per Cent	Silicon Per Cent
1.90	0.49	0.11	0.04	0.06
1.95	0.43	0.15	0.04	1.13
2.55	0.45	0.15	0.02	3.54
3.05	0.47	0.14	0.04	1.00
3.56	0.30	0.09	0.06	0.05
3.25	0.75	0.12	0.02	0.19
3.20	0.36	0.07	0.02	0.08
3.30	0.58	0.05	0.03	0.18
3.40	0.41	0.08	0.06	0.08

The resultant pigs were generally blowy and remarkably tough, and similar in every respect to the special charcoal pig iron described by Graham-Otto in their *Handbuch der Chemie*. A careful series of foundry tests was carried out with the Rombacher charcoal iron and Swedish charcoal iron, the results of which are given in detail in the original paper. The Rombach iron proved fully equal in value to the imported Swedish iron, but really conclusive results will have to wait on a long period of working over a period of years.—G. B. W.

MODERATE IMPROVEMENT

Encouraging Volume of Business at Youngstown —Light Pig Iron Buying

YOUNGSTOWN, OHIO, Nov. 1.—Inflow of new steel tonnage to district independents is still in encouraging volume, with sheets, merchant pipe and strip steel leading. There has likewise been some upturn in plate inquiry, chiefly from builders of tanks and tank cars. One plate interest has been rolling a tonnage of marine boiler plate. The new prices of 2.50c. for blue annealed, 3.25c. for black and 4.25c. for galvanized sheets are not firm, and tonnage is still being accepted by a number of important makers on the basis of 3c. for common sheets and 4c. for galvanized.

Though there has been somewhat more activity in the lapweld pipe market, demand for the heavier steel products still continues light. Heavier specifications on standard steel pipe have served to enlarge tube mill capacity the past two weeks.

Pig iron sales have been confined to moderate tonnages, with steel works interests having large accumulations in several cases. One district maker has about 90,000 tons of iron piled at its yards. While sales have been negotiated at $19 for standard basic, a number of the larger producers are still holding out for $20.

Upturn in plates has been of a very moderate nature, and is attributed to demand for oil storage tanks in large measure. A Warren, Ohio, tank builder, for instance, which manufactures tanks and erects them throughout the American and Mexican oil fields, has recently been seeking 4000 tons of plates. A similar interest at Sharon, Pa., has been in the market for 1300 tons of plates. The price range in the Valley is from 1.60c. to 1.75c., producers failing to hold the 1.85c. price to which they had advanced, due to the keen competitive condition of this market.

Automobile interests continue to take the bulk of Valley strip steel production and buyers are covered to the end of the year on their requirements. Makers hope to be able to establish the prices of 2.25c. for hot strip and 4c. for cold-rolled on first quarter business in 1922.

Full finished sheets produced in this territory are still largely taken by automobile builders, the price ranging from 4.35c. to 4.60c. for No. 22 gage auto body stock.

Open-hearth sheet bars are firm at $32, with the higher quotation of $34 still largely nominal. The principal buyers continue to be non-integrated sheet producers. There is still but little demand for slabs or billets.

Most district steel makers have covered their requirements for scrap materials to the end of the year, and while the market is firm, its strength is due to recent, rather than current buying. Heavy melting is quotable from $14.50 to $15. Most Valley interests are covered for the present on their ferroalloy needs.

BUYING RESPONSIBILITY

How Every Department of the Organization Is Vitally Interested in Buying

By John J. Ralph

Ultimate responsibility of buying is the part of the man who owns the property, whether he is a holder merely of part of the stock or of the entire property. The proof is simple, for the owner profits by it, or foots the bill for the losses. Authority can be delegated—responsibility cannot. If authority be delegated, the owner can hold his employee responsible, but cannot evade his own responsibility or belittle it.

When all is said and done, the buying is done by the management. Decisions may be made by default, as a matter of form confirming those reached by the organization; or arbitrarily, as final authority, whether on information, or through a "hunch." The opportunity to buy passed, or the purchase made, the result is inevitable; and, the action having been taken, events obey laws as fixed and inexorable as those of gravity. The opportunity has either been grasped or lost.

Events take no account of intentions, of personality, of identity. Nor does wisdom displayed in the past, or in another line, have any influence. Only action taken in line with accurate forecasting of the future avails.

This is peculiarly difficult for many to realize. The effect of success, whether as a result of deserts or the vagaries of fortune, lends to the personal ego a radiance and power that is often mistaken for actual ability to influence the future, and to penetrate all mysteries. We thus have incursions of scientific men into the realms of religion, the business man running "peace ships" and the speculator and money man putting ruthless fingers into the delicate mechanism of productive business.

Buying is actually consummated by the purchasing agent, in practically every organization, but it is not here that determination is made. Buying is actually done merely through the various departments having charge of expenditures, whether of materials or labor.

There is usually in each organization some one man who actually controls the buying policy, whether or not he is the purchasing agent. But even he seldom realizes the extent to which his ability to make decisions is circumscribed and defined by the balance of the organization.

Distribution of Buying Responsibility

Fundamental responsibility is that of the design department, for by its work much of the final purchasing problem is decided. Here is specified the materials of which a piece is to be made, their size and weight. Here is made the decision which settles the possibility of using finished material from outside, or the necessity of making everything in the factory, because limits and sizes are so special that standard material cannot be bought to make the part. Here is determined the necessity or desirability of making further additions to the factory equipment, or its alteration.

How closely in touch with the sources of raw supply is the engineering department? How well do the engineers know what is to be had in the market, the cost, the cost of manufacturing in the home plant, and whether it is economically desirable to make or buy? How much do they know of trade practises? Do they know the standard sizes carried in stock, or will their design call for odd sizes that cannot be readily and quickly obtained, and necessitate carrying heavy plant stocks?

There is often a feeling that the engineering department is crossing the line of function when it attempts to obtain these details; hence that department is inclined to take an arbitrary position about the design, maintaining the necessity of strict compliance with its original plans for results.

There are a few cases where necessities of design dictate absolutely the material, size and quality; but engineering design is always a compromise, and it is astonishing how it can be altered and adapted to conform with manufacturing and material restrictions, without injury to the final product.

The Manufacturing Department

Were the factory heads consulted during the time of the design of the product? Were they asked how they would make the part—whether they had sufficient machines to make it that way, or whether it would not be desirable to design for another battery of machines, which did not have enough work to keep them busy, so saving the purchase of additional machinery?

Were they active in the initial stages of the design, so that they might have opportunity to suggest changes and methods which would enable them to cut the manufacturing cost? There have been times when such team work has not only made it possible to pay dividends in poor times as well as good, but has pulled many a concern out of almost sure bankruptcy.

Have they carefully looked over the equipment to see what was not earning its keep, and should be either repaired, altered, stored, scrapped or sold? Do they know what machines are giving so much trouble that it will be wise to get new ones to cut the maintenance cost? Have they analyzed operations to see what ones could be best performed on a newer type or more powerful machine, and when and where it was going to be good business to exchange for the new one?

Have they made tests of supplies to see that the results needed are actually obtained? What else is there in the market that might give them the service they want? Where would a slightly better grade of supplies return dividends through longer service, and where are better qualities being bought than are needed? In case supplies should be held up, what would be the best available substitute?

Are the tools they buy the right ones? Are there enough, or is labor putting in time hunting, altering, adapting them to the job, instead of producing?

What is the relation of the scrap heap to the incoming materials? Are the turnings too heavy? Could materials be bought closer to size? Is the material bought large enough, or has it been bought so economically that it will not "clean up" without excessive labor, to the enrichment of the scrap pile, the labor account, and the discomfort of profits?

How about their stock of information? Does it consist of old and odd numbers of trade journals, piled away in musty corners, partially looked through, unindexed, uncut, unclipped and without a note made? Is it easy for them, when they see a hint of something they would like to know more about, to get it, or are they made to feel that such would be an impertinent movement, out of their sphere?

Sales Department

Concerned with purchasing? Who more so! They have to sell the goods. They come into live and immediate contact with the purchasers. What they sell is but an altered form of what others buy. It certainly does make a difference to them. Sometimes they may be able to suggest a change which will prove acceptable to the customer, yet which will permit decreasing the manufacturing cost. Perhaps they can suggest something that will remove many of the buyer's inhibitions and make the goods sell faster—perhaps for more money, and yet cost no more to make.

Then who is so closely in touch with the market, and has as good facilities for forecasting the output the market will be able to take in the next few months—in the next year?

The Financial Department

This must be considered in every case. To be sure, there are some concerns which for a time purchase regardless of that department, and buy themselves into a mighty big hole.

It is the financial department which knows when money is cheap, and when the times are propitious for making that installation which in a short time will return particularly good profits. It is the financial department which is in a position to know whether or not the big fellows—those who have known in the past

what was coming, and probably will know in the future—are laying aside big cash reserves, curtailing expenditure that is unseasonable, or making provision for coming changes in conditions.

The financial department knows, too, whether or not the concern is in condition to render further investments desirable, and in which direction its money should be used to obtain the maximum profit. It should be in a position to translate engineering and manufacturing efficiencies into dollars.

Its business is buying money and money accommodation. It must work hand in hand with the other departments, for while they must not embarrass it, the whole purpose of the financial department is service to the other departments. It is not a primary producer. If it were, the plant would be a banking institution.

The Recording or Cost Department

How can this be connected with purchases? To know how that stock the owner had to buy, instead of the regular, is going through, expressed in dollars and cents, ask them. They will give him actual information which will enable him to buy with certainty.

If a salesman says that he can cut the sand on the foundry floor for 7c. a cu. yd., the cost department can tell the present cost, the figures the salesman left out, and what the real cost of the operation with the machine would be. They can also tell how many yards of sand there are to cut.

If interested in the efficiency of purchasing methods, they should be able to tell other things. How much did it cost to keep on hand that batch of steel which was bought because it was cheap? What was the worth of the room it occupied, and how much above the standard did handling and re-handling cost?

They are alert to know whether that new machine is delivering in accordance with the predictions, and have the figures to tell whether it will pay to change over the whole battery, or whether it is the proper step to insert in THE IRON AGE "Machinery for Sale" section an "ad," telling about the beautiful little-used machine which is now for sale.

If they cannot get this information promptly without disturbing the entire department, maybe the money invested in this department is not returning proper dividends.

The Purchasing Agent

He is "liaison." He is the contact with the outside world. He meets the visiting expert, the near-expert, the crank, and the plain nuisance. He finds out what they have to offer which is of interest to the concern, classifies and codifies the information. He has catalogs of everything liable to be wanted, and some that are not so likely. He has them, classified and available.

As information comes in that is valuable to this one or that, he passes it along. His information and files are at the disposal of anyone in the plant who needs them. He knows what the conditions are in the stock department, both raw and finished—how the financial department is situated, the progress of the latest selling campaign, the trend of the market, what the designing department is getting out.

He knows, too, who has stocks of material, how long it will take to get it, the sizes stocked, and the chemical and physical characteristics.

A pretty picture, is it not?

Has the P. A., answering an apparently casual inquiry, told how far along the sales department is in its recent campaign, and what they have up their sleeve for their next? Has the production department told what machine will best take up the work that engine lathe has been on steadily for the past three years, now that it is scheduled to raise the output to 400 pieces per day?

Straws show which way the wind blows. If the organization is tied together so that it functions as one, it knows what the next problem will be and the answer to it. Equally important, the organization has figured out what it is going to do after that, if the next move is successful—and if it is not successful.

For successful buying is based on foresight, and cannot be done on the spur of the moment.

Revised Pig Iron Contract Form

The final form of a proposed standard pig iron contract adopted by the National Association of Purchasing Agents in session at Indianapolis recently is given herewith. A preliminary style of contract, which was at first considered, was published in THE IRON AGE of Oct. 20. However, the final draft differs in some fundamentals and in various details from the original. This will be submitted to producers for their approval. It is as follows:

1. *Terms of Payment:*

Invoices shall be paid.....

.....

Noncompliance with said terms of payment shall give the seller the right to suspend further shipments until all previous shipments are paid for, and if in the judgment of the seller the financial responsibility of the buyer shall at any time become impaired and written notice thereof be given by the seller to the buyer, the seller shall have the right to suspend further shipments until adequate security for payment hereunder is furnished by the buyer. If such security is not furnished within 30 days from such notice, the seller shall have the right to cancel this agreement.

Regardless of f.o.b. point, all revenue taxes which have now or may be hereafter imposed upon transportation facilities and service by Federal or State Government, as well as any advance or decline in freight rates existing at the time this contract is executed, are for the account of the buyer.

2. *Weights:*

All settlements are to be governed by track scales at point of shipment, excepting cases where buyer has reason to doubt the accuracy of seller's weights. In such cases seller shall immediately be notified by wire of discrepancy, having the option of either accepting certified weights furnished by the buyer as being correct, or of demanding a check weight on tested track scales nearest to buyer's plant, expense of check weight to be assumed by party found to be in error.

3. *Contingencies:*

Strikes, accidents, fires, floods, wars, interruption to transportation or car supply or to sources of supply of raw material, or other contingencies beyond the reasonable control of the seller to be sufficient excuse for any delay traceable to such causes. Similar conditions affecting the works of the buyer shall be sufficient excuse for any delay in accepting shipments.

(a) Each month's quota shall be considered as a separate and independent contract.

(b) Buyer shall have the privilege of cancelling any shortage of any month's deliveries due to seller's failure to ship when thirty (30) days overdue, by giving notice in writing of such cancellation to the seller within ten (10) days after that time. In case of failure to receive by buyer, seller shall have the privilege of cancelling upon same terms as above. In case neither party exercises the right of cancellation within the stipulated time it is understood and agreed that no cancellation of that month's shortage can be made and that the amount of said shortage shall be delivered and received, the period of the contract being proportionally extended unless otherwise agreed upon between seller and buyer.

4. Waiver by either party of any default by the other hereunder shall not be deemed a waiver by such party of any default by the other which may thereafter occur.

5. Notice sent by telegram or registered mail, addressed to the party to whom such notice is given, at the address of such party stated in this agreement, shall be deemed sufficient written notice in any case arising under this agreement.

6. No understanding, agreements or trade customs not expressly stated herein shall be binding on the parties in the interpretation or fulfillment hereof unless such understanding, agreements or trade customs are reduced to writing and signed by the respective parties.

A booklet on "Platinum" has been issued by Baker & Co., Inc., Newark, N. J. The subject matter is divided into four condensed chapters with the following titles: Historical Summary of Platinum; Occurrence of Platinum Ore; the Platinum Metals, and the Uses of Platinum, Its Allied Metals and Alloys.

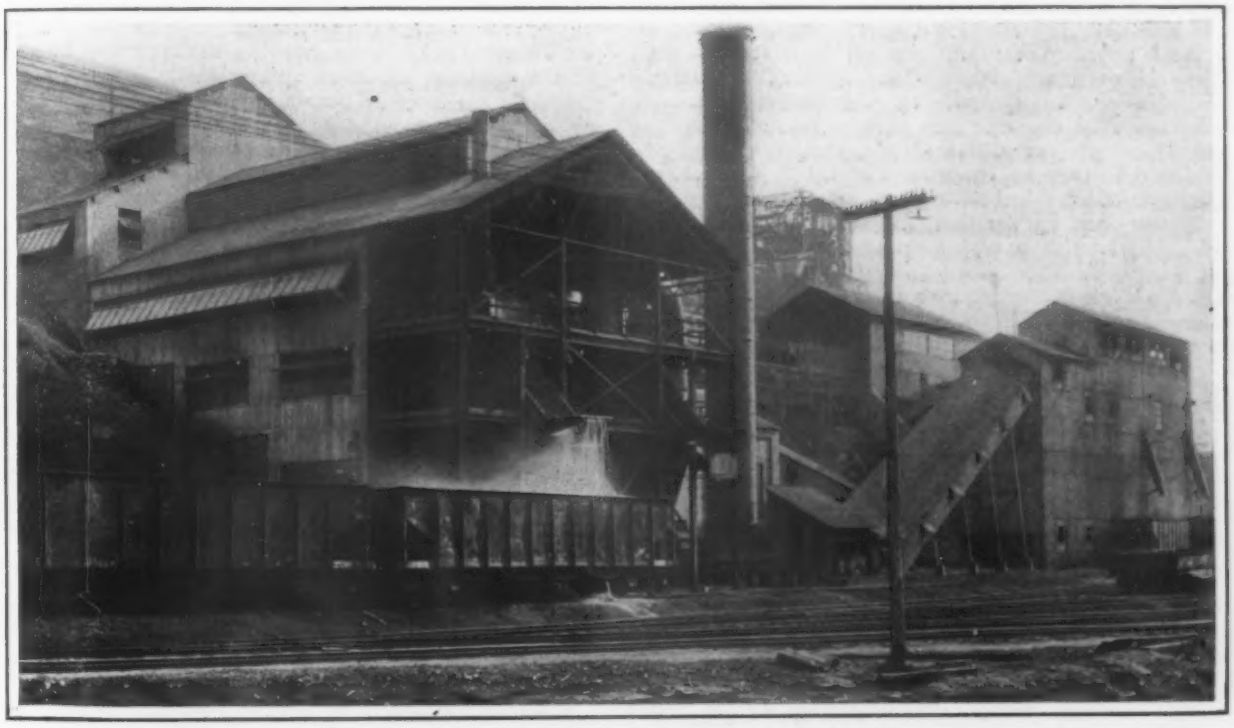
Sintering Flue Dust with Minimum Labor

Twelve Workmen Handle 1000 Tons Daily at Cambria Plant—Ample Storage, Safety and Cleanliness Outstanding

BY H. V. SCHIEFER*

WORKING from preliminary designs of the Cambria Steel Co., Arthur G. McKee & Co., Cleveland, have designed and erected a complete sintering plant at Johnstown, Pa., for the sintering of flue dust, both the large stock on hand and that as produced. The plant embodies two of the large size Dwight & Lloyd sintering machines. Only 12 workmen are needed to handle over 1000 tons of material daily. The plant covers an area, 80 x 300 ft. Advantage is taken of a hillside location to eliminate the installation of an expensive trestle. An area of otherwise useless space is also occupied to advantage.

The plant is designed for the production of 800 tons of sinter per day. Stock pile flue dust, direct flue dust, or a mixture of the two in any proportions, may be used, as well as mill scale and ore. Duplication of machinery is installed in so far as possible so that a shut-down of one piece of equipment will not tie up the plant.



The Discharging End of the Sintering Plant Appears in the Center. To the right is the bin building and back of this and on a higher elevation is the unloading station. Because the plant is located on a hillside, trestle work has been eliminated

Raw material is brought in standard gage railroad cars on two tracks that are about 40 ft. higher than the finished sinter tracks. Two unloading track hoppers are provided. Each has a horizontal area of 30 x 30 ft. and accommodates two cars, making a preliminary storage of eight carloads in and on the hoppers. The unloading tracks extend on a ledge around the hill so that at least 25 loaded cars may be spotted beyond the track hoppers and allowed to coast into position on the hoppers.

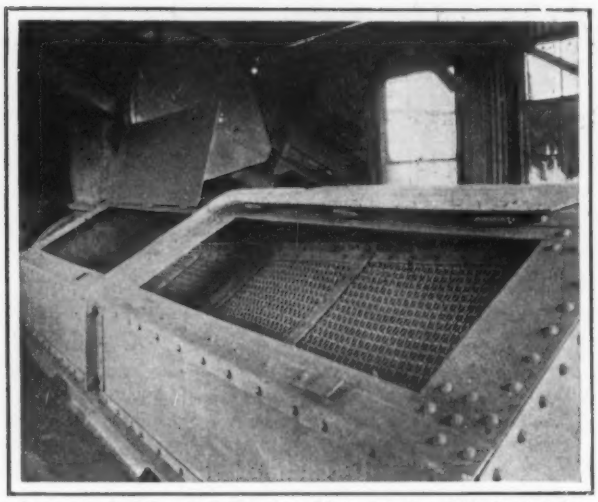
The entire top area of the hoppers is covered by a heavy cast iron safety grillage. The openings are about 4 x 5 in. which eliminate the possibility of a workman falling into the hopper. It also prevents large lumps and foreign objects from dropping into the hopper and plugging the feeders below. The grillage is made heavy enough to allow for the breaking up of frozen flue dust with sledges in the winter. The track hoppers are covered with a sheet steel house. Windows are located high enough to prevent breakage and to allow good lighting.

The track hoppers are of steel plate, at the bottom of each of which is an opening, equipped with a rack and pinion gate for regulating the flow of material. Under each gate a slow-moving conveyor is placed, each consisting of two strands of extra heavy roller chain, between which over-lapping steel pans are attached. At times flue dust is received containing practically no moisture and at other times containing as high as 12 per cent, making the design of a self-feeding conveyor of importance. These conveyors act as feeders as well. They are at an angle of about 25 deg. from the horizontal, are about 60 ft. long and discharge into two revolving screens.

Years of experimenting has been done in trying to successfully screen all kinds of flue dust. The screens as installed are taking the material as it comes and have proven their worth. They are of the revolving center shaft type and are a hexagonal truncated pyramid. The screen cloth, made up of ⅝ in. wire, is mounted on easily-removable frames. Structural steel trolley beams are directly over the screens to expedite repairs. The screens are 4 ft. in diameter at one end, 6 ft. at the other and 12 ft. long and are mounted on 6-in. shafts.

The over-size coke, that is screened out of the flue dust, drops into other bins and thence through chutes to railroad cars, ready to be sent to the furnaces and used as fuel. Each screen is driven by a direct-connected 25 hp. motor. The conveyors are driven through gearing and a clutch from the screen shaft. The gearing

*Until recently with Arthur G. McKee & Co., Cleveland.



Over-sized Coke and Foreign Material Are Eliminated by Two Wire Screens in the Form of a Truncated Pyramid

and screens are enclosed in heavy steel guards to protect workmen and to prevent dusting.

The unloading and screening equipment will handle 1000 tons in 10 hr., thereby cutting the unloading labor to a day turn of 10 hr. only. To permit this four storage bins are provided, with a total capacity of 640 tons, which will supply the sintering machines for the 14 hr. that the unloading gang is not working. There are six storage bins in all, two under each of the two screens for flue dust and two provided for returns, to be described later. These bins are all in a straight line. Each is provided with a standard McKee revolving disk feeder. To eliminate the difficulties encountered in previous feeders for this work, a feeder of new design has been provided that is extremely rugged and designed to take up the wear incident to the material handled. Each bin-bottom is fitted with a cast iron cylinder, open top and bottom, 48 in. in diameter and 30 in. high, with an opening in the side provided with an adjustable slide gate. Directly under the cylinder is a horizontal revolving disk made of ¾ in. boiler plate. This disk is bolted to a spur gear and is driven through a vertical shaft with a bronze thrust bearing. As the thrust bearing wears, the spur gear slides further along the teeth of the driving pinion. This was not the case in previous designs where a bevel gear and pinion were utilized. As the disk revolves, the material is brought against a scraper which directs it through a 7 x 9 in. opening in the side of the feeder. This opening is fitted with an adjustable sliding door so that the discharge of the material may be regulated. The feeders are all driven from one line shaft and any one, or all, may be cut out by clutches.

The Cast-Iron Grillage Prevents Workmen and Large Foreign Material from Falling into the Hopper Below

The openings from all feeders discharge upon a 30-in. belt conveyor. This conveyor and all feeders are driven by a variabale speed motor. The variable speed is necessary since the speed of the sintering machines is occasionally changed when more or less material is required.

By the manipulation of the gates in the feeders any desired proportion of materials may be obtained and at the same time a preliminary mixing is secured. The 30-in. belt discharges the proportioned material upon an inclined belt conveyer that carries the material to the top of the plant and discharges it into a super hopper, which acts as a reservoir only and would be unnecessary if it were practically possible to run the plant in positive synchronism. The bottom of this hopper is bifurcated and is fitted with two McKee revolving disk feeders that are duplicates of the ones under the storage bins except that they run at a higher speed.

From the point where the material leaves the super hopper the plant is divided into two units, each consisting of a pug mill, a sintering machine, fan, and auxiliaries. The feeders under the super hopper are driven by a counter-shaft of the sintering machines and work with them in positive synchronism so that a speeding up of the sintering machines automatically speeds up the feeders. A change of hearth bed depth is accomplished by an operating lever on the operating floor which raises or lowers the opening in the feeders.

From the feeder the material drops into a pug mill which thoroughly mixes the ingredients. Water is added in the pug mill to give the consistency necessary for sintering. The pug mill is a cast iron trough, about 12 ft. long, in which two square shafts revolve in opposite directions. Manganese steel paddles are mounted on the shafts. Ball-bearings running in oil take the thrust. The shafts have couplings so that they may be removed quickly without disturbing the driving gear. The bottom may be dropped and cleaned while the mill is in operation.

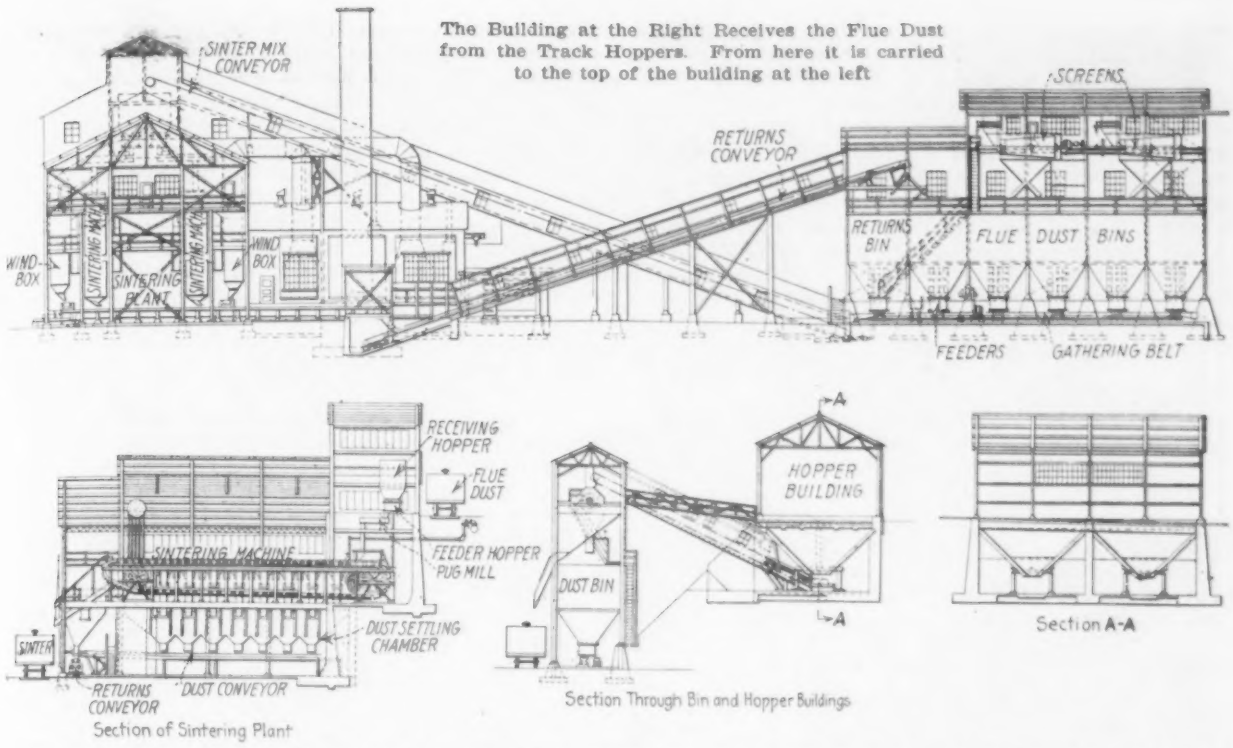
The pug mills are extremely heavy, with an entire cast iron frame, and were designed and built by Arthur G. McKee & Co. Each mill is belt-connected to a 20 hp. motor. The pulley shaft is at right angles to the paddle shafts of the mill and the transmission is effected by bevel gears.

The success of the sintering process depends to a considerable extent on the quality of the mixture as it comes to the hearth of the sintering machine. This factor was given careful attention in designing the plant and as a result the pug mill and sintering machine in each unit are arranged in direct sequence. This insures immediate supervision of the material which is being fed to the hearth of the machine and enables prompt regulation of the content of the mixture in the pug mill.

To maintain a uniform layer of material on the hearth, a swinging spout feeds the sinter mixture from the pug mill. It is pivoted at the discharge chute of the pug mill and by means of a rope and counterweight attached to a crank on a counter-shaft of the sintering machine, it is swung back and forth at right angles to the direction of the travel of the machine. Thus even distribution of the sinter mixture on the moving hearth is assured.

The sintering machines, without any auxiliaries, were furnished by the American Ore Reclamation Co., Chicago. They consist of endless trains of pallets or grates which travel under ignition burners and over wind boxes equipped with downdraft suction fans. These machines have an effective grate area, 42 in. wide and 57 ft., 4 in. long. The old standard Dwight & Lloyd machine was 42 in. wide and 25 ft., 6 in. long, and the lower strand of pallets rolled by gravity along

The Building at the Right Receives the Flue Dust from the Track Hoppers. From here it is carried to the top of the building at the left

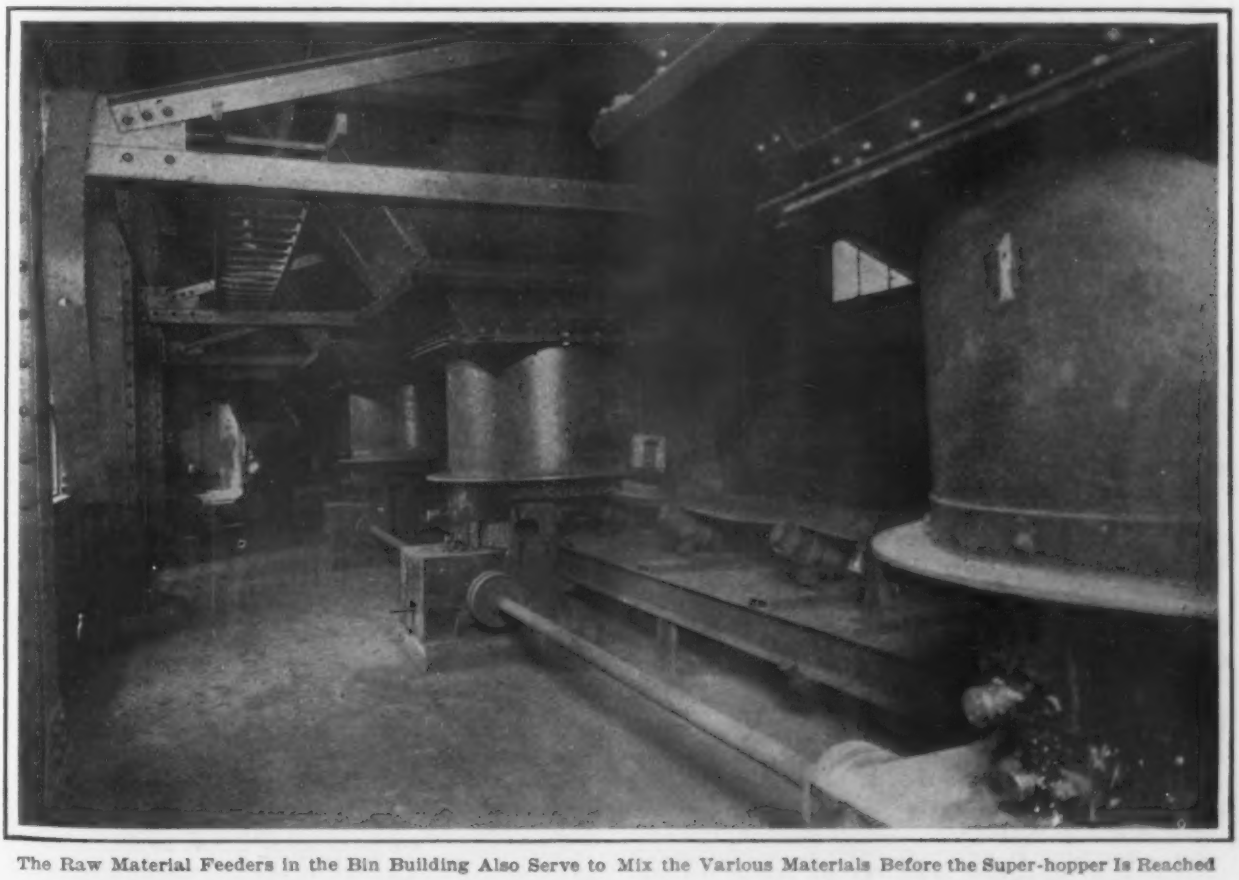


At the Extreme Right Is the Unloading Station Where Freight Cars Dump Flue Dust Through Grillage into the Two Hoppers Below. The center diagram represents the track hopper building and the bin building for storage. Sintering operations are performed in the building at the extreme left

an inclined track back to the driving sprocket wheels. The much greater length of these new machines makes the use of a gravity return undesirable and the lower strand of pallets is, therefore, positively driven along the lower track by sprocket wheels at the discharge end. The latter are driven in synchronism with the driving end sprocket wheels. This synchronous drive insures that the empty pallets are returned to the driving sprocket wheels at the same rate of speed as that of the pallets on the upper strand.

On these new machines, sliding friction between the pallets and the wind box tops is eliminated by carrying the weight of the loaded pallets on wheels running on rails. The pallet wheels are fitted with renewable steel bushings and have large oil receptacles. The sprocket wheel teeth drive against tooth surfaces cast in the frame of the pallet and against the pallet wheels. This allows the pallet wheels to properly perform their rolling function around the curved tracks at the drive end.

The gears and the sprocket wheel teeth are made of steel castings. Gears and shaft couplings are enclosed in heavy sheet steel guards. The sprocket wheel



The Raw Material Feeders in the Bin Building Also Serve to Mix the Various Materials Before the Super-hopper Is Reached

teeth are removable and are machined in jigs so that they are interchangeable.

An important feature of the new machine is the use of seal bars on the pallets, which automatically maintain airtight joints between the pallets and the tops of the wind boxes. These seal bars are made very light and by their own weight bear on the finished surfaces of the wind box tops, and also fit against the finished sides of the pallet slots in which the bars are hung.

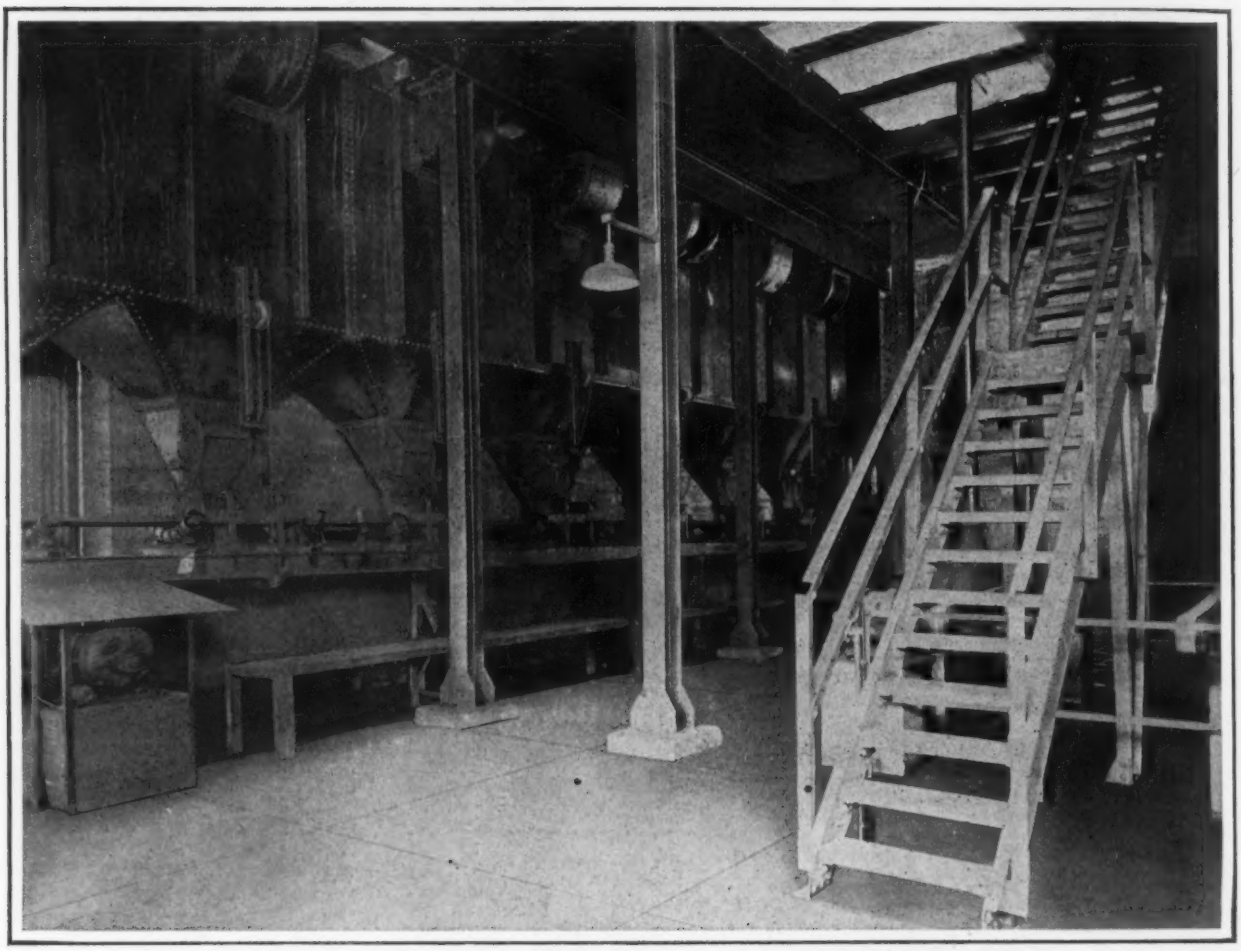
As the pallets travel under the swinging spout, they receive a layer of sinter mixture. The depth of this layer is variable, depending on the fineness or coarseness of the mixture. There is always some critical thickness for any specific mixture at which the greatest quantity and the best quality of sinter is produced. With any arrangement of bins and feeders the thickness of sinter mixture layer varies considerably from day to day.

According to the principles involved in making sinter under the Dwight & Lloyd patent, there is sufficient carbon in the mixture to support combustion, provided the necessary ignition and oxygen are supplied. Flue dust from its very nature is a homogeneous mixture of fine ore and coke and at this plant the flue dust contains enough coke so that it is not necessary to add any further carbon.

The ignition burner, built by Arthur G. McKee & Co., is 2 x 4 ft. overall and is suspended directly over the pallets. Gas for ignition is taken from the top of a 24 in. main that runs through the plant and supplies the Cambria works from the Cambria Steel Co.'s new Rosedale plant. By taking off the top of the main a very clean gas is obtained. Air is supplied by Roots positive pressure blowers, motor-driven and located on the ground floor. The flame must be of sufficient intensity to positively ignite the entire surface of the charge without completely drying it. If the mixture is prematurely dried, the sintering action is retarded. The pallets travel at a speed of from 30 to 90 in. per min. while combustion is going on. When the combustion is completed, the pallets arrive at the end of the machine where they are dumped by dropping one pallet at a time down a curved track. Each pallet hits the one ahead of it a blow that throws the material against an inclined grizzly screen.

A suction of about 20 in. of water is maintained by means of a fan for each machine which is directly connected to a 350 hp. motor. The fans have 100 in. impellers; they revolve at from 600 to 720 r.p.m. and have a capacity of 30,000 to 60,000 cu. ft. of gases per min. each. The fan is enclosed in a steel casing and the bearings are water-cooled. The fans were manufactured by the Buffalo Forge Co., Buffalo, N. Y. They are located in a separate brick building, 27 x 54 ft. Underground flues lead the gases to a single stack, 90 in. in diameter by 80 ft. high.

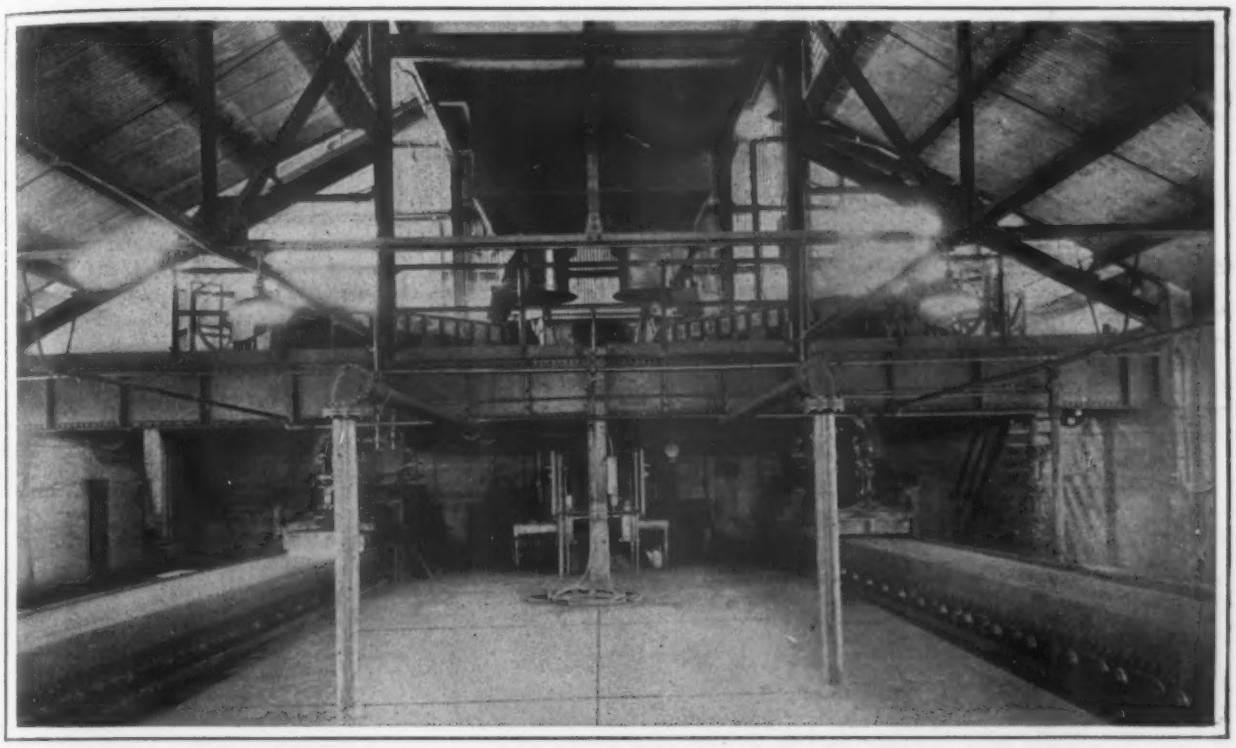
As the sinter leaves the machine it is dumped upon a grizzly screen, 5 ft. wide by 12 ft. long, set at an angle of 32 deg. with the horizontal. The bars of the screen are spaced to give a clear opening of ¾ in. The finished sinter passes over the screen and falls into railroad cars.



The Wind Boxes and the Dust-collecting Belt Are Located on the Ground Floor

The openings in the grizzly screen are designed to give between 20 and 30 per cent screenings, called returns. It is desirable to have this large amount of returns since, when mixed with the raw flue dust, better sintering action results and grate bar breakage decreases. Formerly, the returns were handled in railroad cars, a depressed track being under the sinter screen. With the large percentage of returns this not only requires a number of cars in this service constantly, but requires expensive shifting and unloading. Now the returns are taken back into the system by conveyors.

As the returns drop through the grizzly screen they are caught by a 25-ton hopper, provided with a gate that feeds upon a cast iron pan conveyor. At times the returns are red hot and must be cooled with water. This puts a severe condition upon the conveyor. The conveyor consists of two strands of extra heavy bushed roller chain, between which are hung cast iron overlapping pans. All articulation points of the chain are either chilled iron or case hardened steel. The convevor



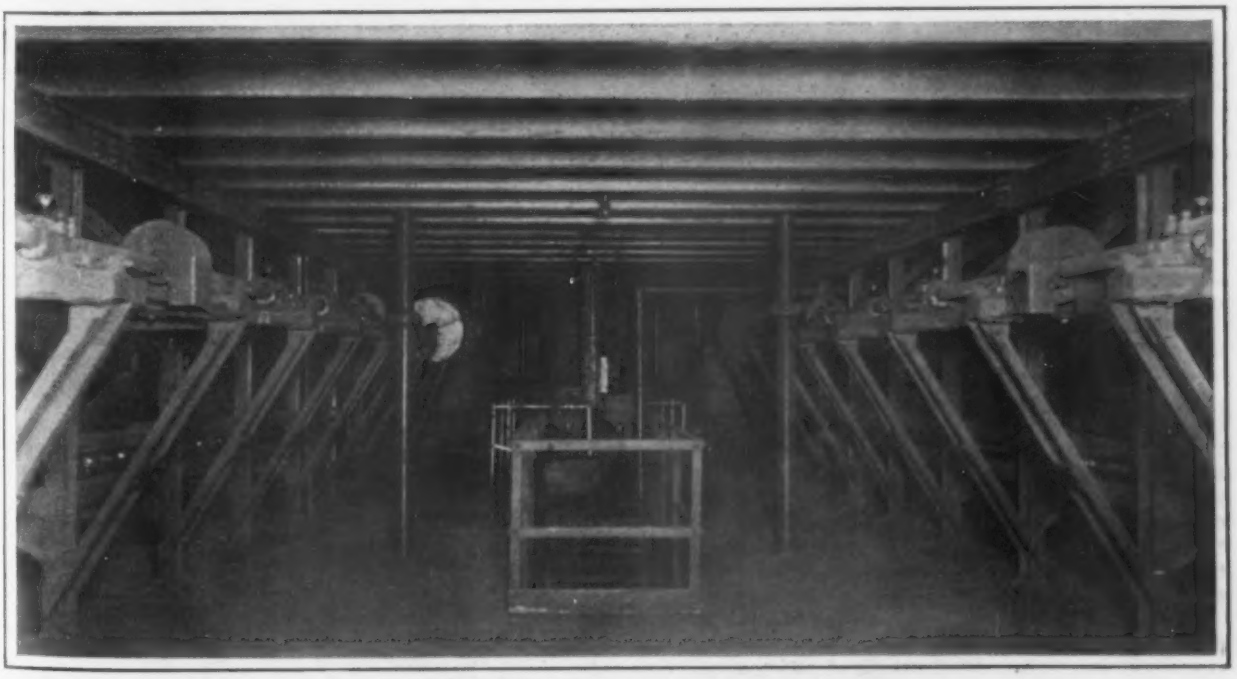
On the Operating Floor Will Be Found the Super-hopper, Pug Mills, Feeders, Ignition Burners and Dwight & Lloyd Sintering Machines

is driven by a 7½ hp. motor through spur gear reductions. The gearing is protected by heavy plate guards. This conveyor extends beyond the building about 30 ft. without a covering, giving the hot material a chance to cool before being discharged upon an inclined belt conveyor which elevates the material into either of two 160-ton storage bins, at the same level and in line with the four stock bins, above mentioned. They are provided with feeders and discharge upon the same belt that receives materials from the other stock bins.

Under each sintering machine there is a dust settling chamber through which the hot gases pass before entering the fans. These are steel bins, each approximately 5 x 10 x 60 ft., and provided with seven cleaning doors each. They must be cleaned every 24 hr. In previous sintering plants the doors have been opened and the accumulated material dropped upon the floor, the material then being removed in wheelbarrows. The hand handling has been eliminated in this plant by a belt conveyor under each dust chamber. These conveyors discharge into the cast iron pan conveyor, above mentioned. The material is mixed with the returns in the returns bins.

The motor equipment was supplied by the Westinghouse Electric & Mfg. Co. Adhering to the general policy of the Cambria Steel Co. the entire plant was designed to make it an absolutely safe plant. All gearing, shafting, belting and all moving parts are enclosed and all platforms, etc., are provided with hand railing and toe boards. All floors and platforms are of concrete to allow for flushing out the entire plant with a hose.

The buildings are all substantial, being either heavy steel framing or brick. A brick office building and service station make the plant complete in itself. All machinery is of heavy design to reduce the wear and renewals to a minimum. By the correct choice of labor-saving machinery and the utilization of centralized



The Sintering Machine Return Track and Machine Drive

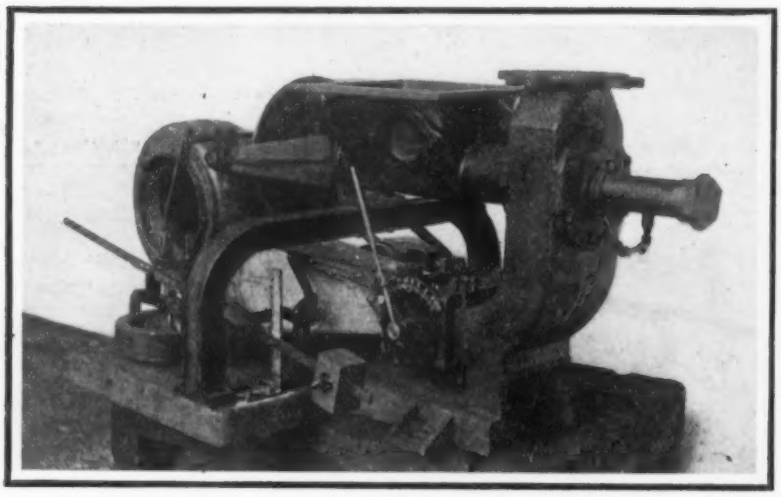
electrical controls and interlocks, the working crew is reduced to twelve men.

The entire plant, with the exception of the electric wiring, was designed and built by Arthur G. McKee & Co., Cleveland, the erection work being under the direction of H. B. Pearson, Jr., general superintendent. The interests of the Cambria Steel Co. were looked after by W. C. Frank, assistant chief engineer, and H. C. Proudfoot, electrical engineer, under the direction of H. A. Berg, assistant general superintendent.

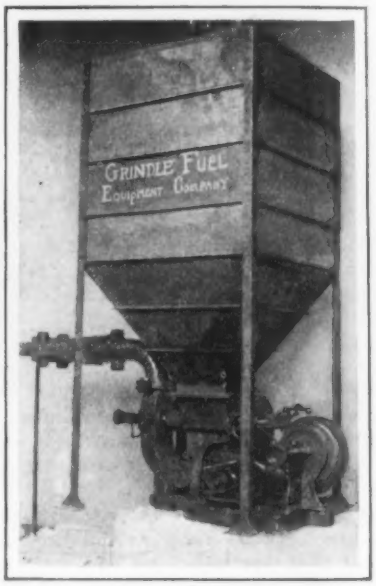
Powdered Coal Under Boilers

Equipment for conveying and burning powdered coal, as manufactured by the Grindle Fuel Equipment Co., Chicago, has been described in THE IRON AGE.* The installations referred to in the exposition of the mechanical features of this equipment were on melting furnaces in malleable foundries. A new application of the equipment was recently made at the plant of Henry E. Pridmore, Inc., molding machine manufacturer, Nineteenth and Rockwell streets, Chicago. Here a 150-hp. boiler, formerly grate-fired, is now operating on powdered fuel with good results.

In its main characteristics, the burning equipment is similar to that previously described. An important innovation, however, is the automatic control of fuel and air supply. The volume of air and the amount of fuel supplied to the mixing chamber for combustion vary according to the boiler pressure. The control is effected through a sylphon air valve, furnished by the Fulton Co., Knoxville, Tenn. As the sylphon valve will not stand over 20 lb. pressure, a reduction valve is interposed.



Equipment without Feed Hopper. The sylphon valve which controls the air and fuel supply is at the extreme left, on base of machine. By connecting levers it regulates the variable speed disk transmission, the rear of which is shown above, and the air gate valve, behind the graduated dial



One Constant Speed Motor Operates Both the Blower and the Variable Speed Disk Transmission, Which Is Connected with the Coal Feed Worm

By means of a variable speed disk transmission, the sylphon valve regulates the speed of the feed worm which carries the pulverized coal to the mixing chamber. The speed of the transmission disk depends on the position of rollers, operated by pulley from a constant speed motor, which are adjusted laterally across the face of the disk by a lever connected with the sylphon valve. Air is supplied by a blower run by the same motor which operates the coal feed worm. A lever from the sylphon valve regulates the air supply by altering the position of an air gate situated between the blower and the mixing chamber.

A graduated dial shows the volume or air passing through the gate, for a given position of the lever. Similarly, a graduated marker on the disk transmission indicates the rate of coal feed. These gages serve as a check on the adjustment of the levers. If it is found that the relative amounts of coal and air supplied to the mixing chamber are not in the proper proportion, necessary adjustments in the levers can be made.

The boiler is now burning from 1200 to 1400 lb. of pulverized fuel per 8-hr. day, whereas its former consumption, when grate-fired, averaged 1.45 tons per day. Very little ash is accumulated in the flues or pan. After three days of operation recently only a shovelful of ash was found in the pan, and none in the flues.

The Grindle company has also prepared designs of equipment for core ovens, in which pressure control is supplanted by automatic temperature control.

*Aug. 14, 1919, page 444, and Dec. 16, 1920, page 1614.

Price Revision on Factory Supplies

The National Supply & Machinery Dealers' Association, through its secretary, Thomas A. Fernley, recently addressed a letter to 300 manufacturers of products handled by the members requesting information as to further price reductions. The request was made that any further downward revision, if contemplated, should be made before Dec. 31 to give ample time for dealers to use the new prices in the depreciation of their inventories for computation of Federal taxes. The association has also issued a bulletin to its members giving the comparative price position of 115 items which comprise a considerable part of their stocks.

In response to the association's letter many manufacturers replied that their prices have already been as fully liquidated as present costs and other conditions will permit; some replied that if further reductions were to be made announcements would be issued in time for this year's inventory; a good many replied that the question of further reductions cannot be determined in advance, but will be dependent upon conditions. A leading independent steel company replied as follows: "The prices of our products have already been very materially reduced and have reached a basis at or below cost of manufacture. In the case of some of our products, prices have been advanced recently. As regards future changes, we, of course, are governed principally by the cost of production and market conditions, so that we are really not in a position to regulate to any extent the time or extent of price changes."

According to figures issued by the Ohio Industrial Commission, more than 50 per cent of the fatal accidents which occur in Ohio industries are those of foreigners, or men who cannot read the English language. While warnings of dangers are printed in many foreign languages, experience shows that the foreigner either does not stop to read them or neglects to follow the advice of experts.

Union Develops Business In Foreign Lands

General Secretary-Treasurer Davidson Explains Operations of Association of Machinists in Mexico and Other Countries—Says Orders Have Been Sent to Open Shops

WASHINGTON, Nov. 1.—Novel in trade union annals, the International Association of Machinists has branched out as an agency to develop business in foreign countries for American manufacturers. That it actually has had success in this direction is made evident from statements, together with supporting facts, coming from General Secretary-Treasurer E. C. Davidson of the Machinists' Union, who discussed the matter with THE IRON AGE. The business done so far through the union has been confined largely to Mexico and has come about through negotiations initiated by Mr. Davidson with both Mexican Government officials and private interests in that country. Business also is being developed through the same manner in South American countries, particularly Argentina and Chile. Up to the present, it has chiefly involved purchases made through the Director General of the Mexican railroads. But the campaign extends to all lines of business, and is not confined to machine tools, railroad supplies or any set of materials.

It is these activities of the union which has led to criticism at the hand of machine-tool builders and other industrial interests in this country. They have maintained that the union has been getting inquiries in foreign countries and seeing to it that the business is placed with union shops exclusively in the United States. Mr. Davidson stated that the claims are entirely unfounded, and set forth the situation in accordance with what he said are the real facts.

Stimulating Industry

Underlying the whole matter, he pointed out, is the desire to stimulate industry in the United States so as to afford employment to American workers. Mr. Davidson stated that naturally from the viewpoint of his organization it would be preferable to see the business go to union shops and union workmen, but said that this was absolutely a secondary consideration. To prove it, he stated that the association has been the medium through which business has been placed with American manufacturers who operate open shops and who, it was declared, have been unfriendly to organized labor. No effort was made by Mr. Davidson to give the impression that the work being done by the association is of a philanthropic character, for it is purely a matter of business.

It is felt that by giving employment to American workmen assistance has been extended in a proper direction, but it goes further and means that by placing any idle man at work the opportunity for other idle men, including union workmen, to obtain employment is increased that much. Mr. Davidson is aware of the fact that there is a feeling that the method being used by the association constitutes a sort of a "peaceful penetration" of unionism in industries of the United States, but holds to his claim that no such purpose is in view. He is of the opinion that, when the work done and being done is clearly understood, it will be realized unjust criticism has been made and that it will give way to appreciation on the part of those getting orders, non-union as well as union manufacturers, of the United States.

Relieving Unemployment

"It was the unemployment situation in this country and the desire to relieve it as much as possible," said Mr. Davidson, "that prompted us primarily to engage on this undertaking. Coupled with this was the fear that European industrial development in export markets in opposition to our own development would set us back. We think we recognized one phase of the situation that was ignored by others. This was the matter of organizations of labor and their influence on the lives of those affiliated with them. In Mexico we found it was a political situation with 87 per cent of the agricultural interests organized. In the Mexican Army we found every soldier was a labor man, associated with the Confederation of Labor, and tradesmen about 100 per cent organized. President Obregon himself is a member of the International Association of Machinists. With this background it was natural that we should expect favorable reaction to our undertaking in Mexico.

"But results cannot be accomplished without a proper understanding of the situation and well directed efforts to develop trade with American industries. The German agents, especially, are busy seeking trade in Mexico and South America and have obtained business there which should have come to this country. The Mexicans prefer to place business in the United States even if they have to pay somewhat more. For instance, an order for steel tires for locomotives recently was delivered in Mexico with Krupps, that might as well have gone to manufacturers in the United States. It is the policy of the Germans to acquaint themselves with American bids and then to submit figures from 20 to 25 per cent or more under them and to accept business on any terms, granting whatever credit is desired. American firms have lost business because of refusal to accept credit, which they could have extended safely, in my opinion.

Rail Business Lost

"Lately the Mexican Government made an inquiry for 15,000 tons of steel rails. A prominent United States interest lost the business because of its refusal to grant the desired credit terms. We now have put the Director General in touch with another American interest in the hope that the latter will obtain the business before it goes to a foreign manufacturer. If the order comes to an American mill, it will put more men to work, not machinists, of course, but it will aid others and that is the idea we have in mind.

"We have been the agency which has placed American manufacturers in touch with Mexican purchasing interests, resulting in business being placed. One order covered fire equipment, and it went to a manufacturer in this country who runs an open shop. That made no difference to us. Other similar cases may be cited, such as orders for lathes, planers, drills and other machinery and engines and box cars for railroads in Mexico, and also cultivators and sugar mill machinery. We have inquiries also from South American countries, such as Argentina, that now are the object of negotiations between Government authorities there and American makers."

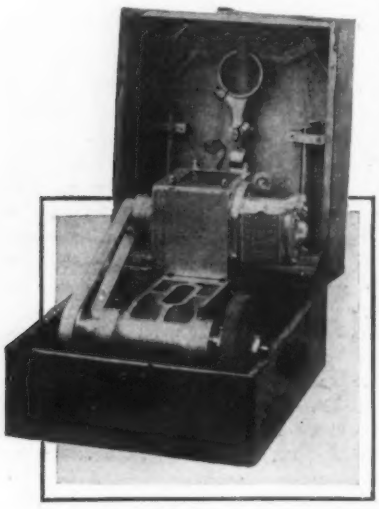
Mr. Davidson said that one condition upon which orders are placed is the right reserved by the association to see that orders go to plants that will meet specifications in every particular and pay strictest attention to quality. Delivery of inferior material in Latin-American countries, it was stated, has worked an injury to American exporters, the high-grade concerns which do meet specifications suffering in reputation along with those that have not lived up to their contracts.

It was stated by Mr. Davidson that the association has no financial arrangement of any kind in connection with negotiations it starts and that it does not ask and will not accept commissions.

Reports from 45 metal working shops in Milwaukee for September show a total enrollment of employees during the month slightly under that of August and materially under the number at work in the same shops in September, 1920.

Portable Electric Universal Precision Grinder

A portable electric grinding machine of French manufacture, known as the R. V., for use on any type of machine tool or in a vise, and for a variety of work requiring accurate grinding or the re-touching of hardened parts, is being marketed by Arva Stroud, 327 Broadway, New York. The machine is furnished in two models, one of which has a ½ hp. motor with a round frame, the other a 1 hp. motor with a square frame, as shown in the accompanying illustration.



A Slot in the Base Permits of Fitting the Grinder to Machine Tools

The motor is of the universal commutator type, operating on alternating or direct current. The stator is made up of special steel laminations 0.02 in. thick, insulated with paper and is cast integrally with the aluminum casing, a feature intended to prevent displacement. The armature core is formed by a series of laminations insulated with paper and secured to the shaft by two sleeves, forced on by hydraulic pressure. The shaft is of special steel and the laminations ground to size. The commutator is of patented construction and is composed of 32 segments of high conductivity copper, the radial connections being made in one piece with the segments. These segments are insulated with pure mica and the windings impregnated in vacuum. The brush holders are supported on a ring of molded insulating material and are accessible from the outside of the machine. The tension of the brush springs can be regulated and the brushes conveniently changed.

The grinder frame is of hard aluminum alloy. The front forms the grinding shaft housing, the back forming a base to support the motor, which is secured by stud bolts working in machined slots, the tensions of the driving belt being adjusted by sliding the motor in the slots. In the center of the base, a slot 1 in. wide and 3⅜ in. long is said to permit of a strong and convenient means of fitting the grinder to any machine tool. The grinding spindle runs on two ball bearings of large diameter and the various sleeves and extensions are fastened to it by a conical sleeve and a square thread, a construction intended to give the double advantage of not disturbing the centering of the cone and also of facilitating the removal of sleeves and extensions. A two step pulley on the shaft provides speeds of 4000 r.p.m. and 12,000 r.p.m., the lower speed being for external grinding and the higher for internal work.

The full equipment includes a neat wooden carrying case containing 2 grinding wheels 5 in. in diameter, with sleeves and flanges; 2 spindles for internal grinding, with wheels; 1 adjustable table for hand grinding; 2 endless belts and 1 socket with cord for attachment to lighting fixture. The machine weighs 22 lb. net and 37 lb. with box and accessories.

Accidents in the Steel Industry

That the total steel mill accident rate, per 10,000,000 hr. worked, has fallen 55 per cent since 1907, and that the fatal accident rate has fallen more than 70 per cent, are shown by figures of the Department of Labor. The figures given for 1907, per 10,000,000 hr. worked, show 7 deaths, 13 cases of permanent disability, 788 cases of temporary disability and a total of 808 cases. For 1920 these figures were 2 deaths, 9 permanent disability, 357 temporary disability and 368 cases in all.

Severity rates fell in about the same proportion as frequency rates. Figures for 1907 showed an average of 72 days lost for each 10,000 hr. of exposure. In 1920 the loss was only 27 days.

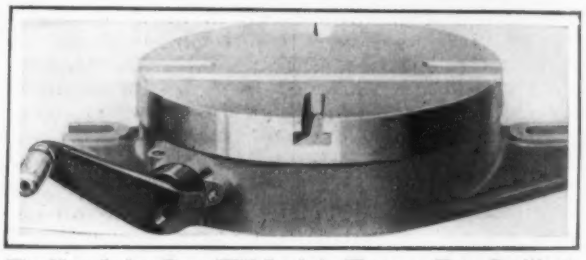
All departments, save the electrical, shared in this gain, the open-hearth and blast furnace plants showing the greatest decreases, and needing to do so, for their rates in 1907 were more than double the average of the other departments.

New Line of Index Bases

In addition to its standard line of two-way index bases the Industrial Engineering Co., Detroit, has recently put out a new line which will index and clamp with one movement of the lever in 3 or 4 positions at 120 deg. or 90 deg. respectively. The mechanism is the same in principle as in the older line of bases and the sizes and table dimensions are identical, viz., 10 and 16 in. in diameter.

The device is made of heavy, solid metal and clamps solidly and accurately into position. There can be no variations, it is claimed, because the design of the base eliminates the chance of leaving the parts out of alignment. All working parts are of special steel hardened and ground. One movement of a hand lever accurately indexes and clamps the table powerfully to the base. The index table is located on its base by bearings of large diameter, which in conjunction with the strong holding-down feature and low height of the base is said to make an exceptionally rigid fixture, permitting heavy cuts to be taken.

Among the advantages claimed for the index base is the elimination of idle machine time due to loading and unloading. Referring to the illustration it will be seen that there is a single slot for accurately locating any fixture and four T-slots for bolting it down. When the pieces in one side of the fixture have been machined,



The New Index Base Will Lock in Three or Four Positions

index the base table 180 deg., bringing the parts in the opposite side in proper position for machining. Then the machined parts are unloaded and the new parts put into position while the cutters are working on the other side.

The indexing is controlled by a lock which automatically takes up its own wear and is said to be positive and fool proof. The height overall is 3⅛ in. and the length overall, 14 in. in the smaller and 20 in. in the larger size. The weight is 45 lb. and 105 lb. for the 10 and 16 in. size respectively.

The flow of water through galvanized spiral riveted steel pipe of 4 to 10 in. in diameter is the subject of an engineering bulletin, No. 8, issued by the Engineering Experiment Station at Purdue University, Lafayette, Ind. The study was made by F. W. Greve, associate professor of hydraulic engineering at Purdue University, and R. R. Martin, research assistant in hydraulics.

Professor S. W. Dudley, Yale University, formerly chief engineer Westinghouse Air Brake Co., talked on "What Stops the Moving Train" at a meeting of the New Britain, Conn., branch of the American Society of Mechanical Engineers held in that city on the evening of Oct. 25. Calvin Rice, secretary of the New York branch of the society, told of the work of the society.

GERMAN PRICE TREND UPWARD

Scarcity of Wire Rods, Wire and Nails—Mills Refuse to Open Books for 1922 With Higher Prices in Prospect

(Special Correspondence)

BERLIN, GERMANY, Oct. 16.—The strong forcing up of prices which has been a feature of the iron and steel market during the past month seemed to have given way to a saner tone at the beginning of the past week. The lull, however, proved to be only temporary, and was quickly followed by higher quotations. When it is considered that the slump in the German mark, largely due to the unfavorable decision on Upper Silesia, has only begun to be reflected in prices, a further rise may be prophesied the moment the ultimate result of the decision is known in detail. Upper Silesia will undoubtedly be the determining factor in the trend of the market during the coming weeks.

Quotations toward the end of the week were about 7 per cent above the level of the forepart, with the exception of pig iron, which has been fairly well stabilized. A further advance of pig iron is, however, a foregone conclusion, and will probably occur by Nov. 1. Details have not been announced, pending a meeting of the pig iron syndicate, Oct. 25, but interested circles predict an increase of 300 to 500 m. ($1.74 to $2.90) per ton. Semi-finished material showed but slight change with quotations around 2900 m. per ton for basic material and 3100 m. per ton for open-hearth material.

In finished material, hoop iron of box band quality stiffened perceptibly as well as rounds. Business in heavy and medium sheets was somewhat lighter, but in the light plate market demand continued strong. There was also a strong tone in the wire market. Rods were practically unobtainable except in resale lots or out of warehouse at high prices. Export quotations on wire rods are from £9 to £9 5s.

Foreign consumers are attempting to place large quantities with mills, particularly galvanized fence and barbed wire, but have not met with any notable success, as makers generally decline to open their books for 1922, besides figuring on higher prices during the coming weeks in view of the improvement in foreign markets. Fair domestic buying of nails is noted, and bright material is greatly in demand. Prices are rather erratic, 430 m., base ($2.50) per 100 kg., being quoted for bright wire by some makers, while a Rhenish works named 470 m. ($2.72). There is a similar discrepancy in galvanized wire prices, which range from 437.50 m. ($2.54) to 510 m. ($2.96) per 100 kg. Jobbers are now stocking up heavily on barbed wire and 551 m. ($3.20) per 100 kg. is willingly paid for close spaced material. Latest export quotations are 33s. per 101.6 kg. Pipe and tube quotations have advanced and a further increase of about 30 per cent is rumored.

At the end of the week quotations were as follows, per metric ton:

	Marks	
Bar iron	3500	$20.30
Structural shapes	3400	19.72
Concrete bars	3500	20.30
Hoop iron, box band quality	5300	30.74
Wire rods (nominal)	3600	20.88
Rails, standard sections	3200	18.56
Rails, for mines	3000	17.40
Sheets, heavy	2700	15.66
Sheets, medium	2800	16.24
Sheets, planished	5700	33.06
Plates, light	4100	23.78

Pipe

	Marks Per Metre	Cents Per Ft.
Boiler tubes, 3½ in.	90.00	12.72
Gas pipe, ⅜ in.	6.20	1.10
Gas pipe, 1 in.	13.50	2.37
Gas pipe, 1 in., galvanized	24.00	4.24

Sharp Increase in British Steel Exports in September

British steel exports took a sharp upward swing in September, according to the official data just made public. The total was 138,248 gross tons, excluding iron ore and including scrap, which is close to twice that for July or August. Compared with September a year ago, the outgo was only a little over 50 per cent of what it was then at 256,280 tons. The average for the third quarter of this year and for the entire nine months is still considerably below the average monthly exports for 1919 or 1920.

Iron and steel imports in September were exceedingly heavy and the largest not only for any month this year but also for any month in many years. The total imports, excluding ore and including scrap, were 229,391 gross tons which compare with 173,838 tons in September, 1920, and with an average per month in 1913 or 195,264 tons. The following table shows comparative data:

British Steel Exports and Imports, Gross Tons

	Exports	Imports
Aver. per mo. first quarter 1921	183,373	186,040
Aver. per mo. second quarter 1921	109,670	96,320
Aver. per mo third quarter 1921	93,804	160,727
July, 1921	64,001	103,561
August, 1921	79,163	149,231
September, 1921	138,248	229,391
Aver. per mo., 1919	188,519	50,801
Aver. per mo., 1920	274,881	128,685
Aver. per mo., 1913	420,757	195,264

The trend of some of the principal exports is shown by the following data:

Principal British Exports, Gross Tons

	Average Per Month 1913	1920	Sept., 1920	Sept., 1921
Pig iron	78,771	38,505	29,659	5,108
Steel rails	41,676	11,213	13,969	20,090
Steel plates	11,162	16,571	15,757	6,016
Galvanized sheets	63,506	34,244	29,101	21,670
Steel bars	20,921	30,322	28,401	9,805
Tin plates	41,208	29,418	20,543	19,792
Black plates	5,679	3,026	1,893	1,256
Steel sheets	....	....	9,959	3,729

Exports of steel rails have shown the most marked recovery in the above products with galvanized sheets and tin plates next.

Imports of pig iron in September were beyond precedent at 120,806 tons bringing the total for the third quarter over 224,000 tons.

Iron ore imports in September were only 89,379 tons as compared with 541,742 tons per month in 1920. In September, 1920, they were 487,211 tons. The total for the first nine months of this year was 1,425,399 tons as compared with 5,195,390 tons for the first nine months of 1920.

Manganese ore imports were only 3731 tons in September which makes the total to Oct. 1 this year, 156,597 tons against 327,097 to Oct. 1, 1920.

Foreign Buyers of Iron and Steel

September exports from the United States of iron and steel products were mainly to Canada, Japan and China. Smaller quantities were taken by Mexico, Britain and India, and still smaller by other countries. The list, from figures of the Department of Commerce, follows:

Destination	Tons	Destination	Tons
Canada	22,638	Cuba	2,986
Japan	21,317	Philippines	2,373
China	13,540	Argentina	1,548
Mexico	7,198	Colombia	1,272
British Isles	6,521	Honduras	1,200
India	4,463	Kwantung	728

The Atlas Foundry Co., Cleveland, has turned its attention to the manufacture of welding rod and is now devoting practically its entire capacity to making this rod, which is used for welding cast iron castings by the oxy-acetylene process. C. L. Bennett, formerly district sales manager of the Page Steel & Wire Co., Cleveland, has become sales manager of the foundry company, with his office at 510 Guardian Building.

The Hartford branch American Society of Mechanical Engineers will hold its first meeting of the season at Hotel Bond, Hartford, Conn., Nov. 3.

TRADE ASSOCIATIONS

Secretary Hoover Declares They Are Highly Useful in Solving Business Problems

WASHINGTON, Nov. 1.—Though the Administration has declined to make a formal definition of its attitude regarding trade associations, pending the decision in the Memphis Hardwood case, an informal interpretation of its position is believed to have been expressed by Secretary of Commerce Hoover last Friday night, when he addressed the Synthetic Organic Chemical Manufacturers' Association here.

Secretary Hoover and Attorney General Daugherty have held a number of conferences on this subject and are understood to have reached an agreement on the general principles involved and apparently were on the verge of making a public announcement. At the last moment, however, Mr. Daughtery is said to have come to the conclusion that it would be injudicious to take such action, in view of the litigation now before the Supreme Court. Mr. Hoover, in his talk, reiterated his past position in support of the legitimate activities of the trade association, which he held to be not only "an enormous power in commerce, but that it is a tremendous power for good in industry, and it represents a new step in the whole social and economic development of our business lives."

The various trade associations, Mr. Hoover said, present a point of contact for a department in the Government such as did not exist 10 years ago, and by setting up a friendly relationship between the Department of Commerce and these associations, the Government is able to get in touch with the needs of all of the different branches of industry.

"We have within these United States something over 2000 trade associations," said Mr. Hoover. "I presume that 80 per cent of those associations are the creation of the last 10 or 15 years, and one does not see a great movement of that character in a country unless it expresses something that is vital, and something that is permanent in the economic system."

"I have the feeling," the Secretary continued, "that this coming together of manufacturers in the different trades for the purpose of the advancement of their industry as a whole is a profound step toward cooperation in the entire business world, and that out of it will be gained tremendous benefits to the whole business public."

Mr. Hoover stressed the value of the trade association in handling properly the elimination of waste in industry. He said he knew of no way by which it is possible to undertake the solution of collective questions relating to waste, except by the co-operative organization of the men in an industry; that we cannot go on and hope to make the progress that will maintain this standard of living in the face of the competition that we have in front of us, unless we can make some progress in the collective sense. So far as I know, the only way that we can hope for it is through the organization of associations that will take up the problems that are common to all, that gain inch by inch the efficiency and stability that makes for national efficiency.

"The trade associations throughout the country have been subject to a great deal of criticism because some very small minority of the associations have undertaken practices that were in fact or in suspicion a violation of the restraint of the trade acts. A short time ago a canvass was made of trade associations to find the number that embraced in their category of effort those particular functions that are subject to a suspicion, and it was found that less than 10 per cent of the trade associations of the United States have any functions of that character at all; that there were associations that had been created under the name and cloak of trade associations for the purpose of restraint of trade and of combination; that it had brought the whole world of trade associations into some criticism. But that canvass of the department of the working of the vast majority of trade associations in this country convinces me that the objective of these organizations is not in the remotest sense against the public interest; that in fact a study of the trade associations that we made shows something like 30 different lines of activity in which they were engaged, covering a great range of educational subjects, matters of improvement in fundamental practice in the industry as to trade questions, interest in matters of transportation, elimination of waste, foreign trade, etc.—some 34 different activities; and of all those activities there had been embraced only two that were at all subject to discussion as to whether or not they were against public interest in even a remote sense, and less than a very small fraction of these associations were even engaged in those."

SEEK FOREIGN TRADE

Samuel M. Vauclain's Advice to Manufacturers of Massachusetts—Says Business Is Good

The Associated Industries of Massachusetts held its sixth annual meeting Thursday, Oct. 27, and Friday, Oct. 28, at the Copley-Plaza and Westminster Hotels, Boston. Approximately 600 attended. The following officers were elected for the ensuing year: Charles R. Gow, Charles R. Gow Co., Boston, contractor and engineer, president; J. K. Milliken, president Mt. Hope Finishing Co., North Dighton; George A. Galliver, president American Writing Paper Co., Holyoke, Mass., and Malcolm B. Stone, treasurer and first vice-president Ludlow Manufacturing Associates, Ludlow, Mass., vice-presidents, and William H. Gleason, treasurer.

Many speakers addressed the various group gatherings and the association as a whole. Among them was Samuel M. Vauclain, president Baldwin Locomotive Works, Philadelphia, who talked on the "Present Condition of American Industry and the Outlook Abroad." He said in part:

"We have become the workshop of the world—almost unconsciously and without a knowledge of the procedure necessary to success. The business men of this country must begin right now to send out the youth of their line, and establish by perseverance and close study of the business methods of other nations a world-wide trade. We must forever see that our foreign trade is supported even though financial pressure is resorted to in an effort to absorb here in the United States our total production.

"Our foreign customers have learned how business can be continued even though the currency of their country may be suffering ruinous exchange rates with that of other nations. Credit will be the great means of trade resumption—the great supporter of all building, manufacturing and general trading. If we will proceed upon a basis of building a foundation for trade and be satisfied to await results after that has been accomplished, the future must surely bring to us an ever increasing percentage of the business of the world.

"Immediately after the world war I concluded that our domestic business would soon become unreliable, that we would be confronted by the mountains of prosperity and the canyons of depression—both unprofitable to a manufacturer. Therefore, in order that we could at all times be assured of business remunerative to both employer and employee, an effort should be made to bring to Philadelphia a fair share of the world's work of such kind as could be produced by us. The sales department was divided, and a vice-president put in charge of each section, one domestic and one foreign; and the world in its entirety divided into zones. a man-

ager for each, together with his staff; a molecule of our organization devoting its entire time to the customers to be found in its particular zone. It was surely a departure.

"And to-day, after but a short period of time in which to perfect both domestic and foreign trade on a 50-50 basis, our order books show 60 per cent foreign and 40 per cent domestic—and more orders have been booked so far the month of October than during any month since the spring of 1920, and this notwithstanding the eternal and infernal pessimism that has prevailed in this great United States of America.

"There are oceans of business of all descriptions to be had if you will get it. Establish yourselves the world over. Your business office should be in every metropolis of the world, regardless of the nation in which it is to be found. Your salesmen should be trusted, supported and paid well, not only for their services, but for their isolation from friends, relatives and native land.

"Our business is good—the future promises even better—and if we will only not await business to overtake us but proceed with determination to overtake business, our country will soon be more prosperous than at any time during the past."

Hon. Samuel E. Winslow, chairman House Committee on Interstate and Foreign Commerce, Washington, representative in Congress from the fourth Massachusetts congressional district, and president and treasurer Samuel Winslow Skate Mfg. Co., Worcester, Mass., also spoke.

Taylor Society's Annual Meeting

Sessions devoted to plant executives, sales executives, office managers, labor managers and general sessions will be held by the Taylor Society at its annual meeting Dec. 1, 2 and 3 at the Engineering Societies Building, 29 West Thirty-ninth Street, New York.

The first plant executives' meeting will be held at 10 a. m., Dec. 2, when a paper on "Reflections of a Production Manager" will be delivered by Charles F. O'Connor, production manager Universal Winding Co., Providence, R. I. His theme will be the problem of maintenance of scientific management under the stress of varying operating conditions. A second session devoted to this group of members will be held at 10 a. m., Dec. 3, when D. J. Walsh, Jr., will discuss "Combination Routing—To Meet the Problem of Small Quantities and Short Operations."

"Appraising the Efficiency of an Industry" is the topic of the first general session at 8 p. m., Dec. 1. This will be devoted to an examination of the evaluation sheet devised and used by the engineers of Hoover's Committee on Waste. These questions will be considered: Did these engineers devise an acceptable standard formula? Can it be used by plants for the purpose of self appraisal?

"The Application of the Principles of Scientific Management to the Work of the Treasurer and the Comptroller," will be the topic of the general session at 8 p. m., Dec. 2. A report for a committee by John H. Williams, Day & Zimmerman, Philadelphia, will be presented. Master planning, budget control, etc., will be considered.

The labor managers' session will take place at 10 a. m., Dec. 3, when Boyd Fisher, Lockwood, Greene & Co., Boston, will discuss "The Formula for an Efficient Workman."

Publicity for Drop Forgings

Following the example of other industries, the American Drop Forging Institute, with national headquarters in Cleveland, has entered upon a campaign of publicity and educational promotion of its products, the appeal being directed at this time mainly to farmers, who are among the largest buyers of machines, for work and pleasure.

What is styled in merchandising parlance the "big idea" back of this campaign is an effort to impress upon buyers and the actual users of all types of tools and machines the importance of knowing whether or not all the "strain-bearing" parts are really drop forged.

An easily understood book has been prepared for the layman, entitled "What Is a Drop Forging?" which covers the subject in an authoritative manner. A copy may undoubtedly be obtained by addressing the American Drop Forging Institute, Hanna Building, Cleveland.

COMING MEETINGS

November

Industrial Relations Association of America. Nov. 1 to 4. Annual convention, Waldorf-Astoria Hotel, New York. E. A. Shay, acting executive secretary, 671 Broad Street, Newark, N. J.

Industrial Cost Association. Nov. 2, 3 and 4. National Cost Conference, William Penn Hotel, Pittsburgh. Secretary, A. A. Alles, Jr., Peoples Bank Building, Pittsburgh.

National Founders' Association. Nov. 16 and 17. Annual meeting, Hotel Astor, New York. Secretary, J. M. Taylor, 29 South La Salle Street, Chicago.

American Iron and Steel Institute. Nov. 18. Fall meeting, Commodore Hotel, New York. H. H. Cook, assistant secretary, 61 Broadway, New York.

December

Taylor Society. Dec. 1, 2 and 3. Annual meeting, Engineering Societies Building, New York. Dr. H. S. Person, managing director, 29 West Thirty-ninth Street, New York.

American Society of Mechanical Engineers. Dec. 4 to 9, inc. Annual meeting, Engineering Societies Building, New York. Calvin W. Rice, secretary, 29 West Thirty-ninth Street, New York.

Academy of Political Science to Discuss Industrial Relations

The forty-first annual meeting of the Academy of Political Science will be held Nov. 4 and 5 at the Hotel Astor, New York. There will be five sessions at which will be considered: Personnel work and co-operation within industrial plants, industry-wide co-operation, good-will and co-operation in industry, this in charge of Herbert Hoover, Secretary of Commerce; industrial relations in governmental employment and in financial institutions, and governmental and other organized counsel and information to promote better industrial relations.

Among those scheduled to speak are: Charles R. Hook, vice-president American Rolling Mill Co., Middletown, Ohio; L. K. Comstock, president L. K. Comstock & Co., New York, electrical contractors; A. C. Bedford, chairman board of directors Standard Oil Co. of New Jersey; Thomas V. O'Connor, United States Shipping Board; James J. Davis, Secretary of Labor; Payson Irwin, formerly of industrial branch Army Ordnance; Dexter S. Kimball, dean, College of Engineering, Cornell University; Alexander C. Brown, president, Brown Hoisting Machinery Co., Cleveland, and H. H. Doehler of Doehler Die-Casting Co., Brooklyn, N. Y. Owen D. Young, treasurer, General Electric Co., is among those selected to engage in the discussion.

The Hon. G. D. Robertson, Minister of Labor, Ottawa, Canada, and Will H. Hays, postmaster-general, Washington, are expected to contribute to the discussion of the session devoted to good-will and co-operation in industry. Conditions essential to industrial co-operation from a British employer's point of view will be presented by B. Seebohm Rowntree, president Rowntree & Co., Ltd., cocoa works, York, England.

Engineering Meetings

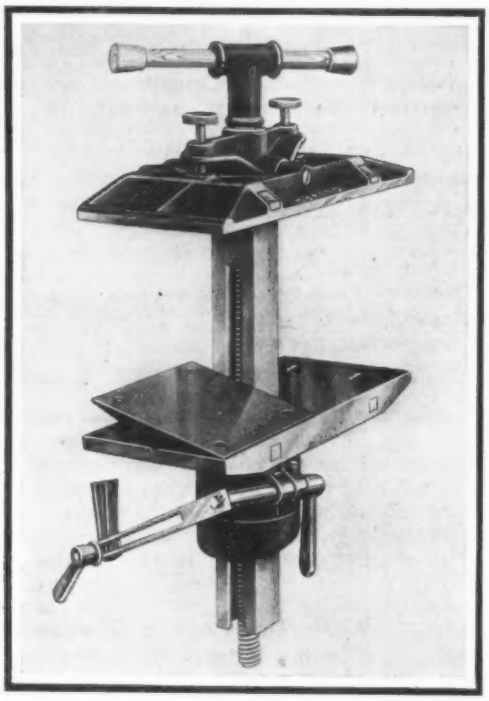
Among sectional meetings of the American Society of Mechanical Engineers to be held in the early future may be mentioned the following:

Nov. 17, Toledo, Ohio, address on the "Industrial Engineer in Business" by Clifton B. Reeves, Willys Overland Co.

Nov. 25, Metropole Hotel, Denver, address on "Properties of Cast Iron and Gray Iron Foundry Methods" by William Lester, Vulcan Iron Works.

New Universal Vise

The accompanying illustration shows one application of a new universal vise brought out by the Oliver Machinery Co., Grand Rapids, Mich. Some idea of its scope of application may be indicated from the reproduced photograph, but the company has issued an illustrated folder showing ten or eleven different positions which the vise may be given, including its use for holding metal parts as in working metal patterns and for holding box forms, or circular work, both vertically and horizontally, as well as including its adaptability to holding irregular shaped pieces.



Oliver Universal Vise in an Upright Position Having the Jaws Horizontal with Detachable Angle Jaw in Position

Screw for Attaching Nameplates to Machinery

The screw shown in the accompanying illustration has been recently brought out by the Parker Supply Co., Inc., New York, to meet the demand for an inexpensive method of permanently attaching nameplates and trade marks to machinery. It is called a "drive screw" and has a thread of steep pitch and a slotless head. In using the screws, holes are drilled a trifle larger in diameter than the cylindrical point, or pilot, and the screw then driven in with a hammer. It is claimed that the entire screw being hardened and heat treated, the steep pitch threads easily cut their way into gray iron or any softer material. The screws cannot be removed except by cutting off, thus making it difficult, it is pointed out, to substitute another nameplate than the one originally fastened to the machine.

To Remove, the Screw Head Must Be Cut Off

Negotiations are in progress for the sale of the Harley Co., Springfield, Mass., drop forgings property. This plant has been idle several months because of loss of patronage due to the general business depression. Persons identified with the Hendee Mfg. Co., Springfield, motorcycles, always have owned a substantial interest in the Harley Co. and recently took over the Harley owned stock. At that time the Harley Co. recorded a mortgage of $725,000 to the Hendee Mfg. Co.

Reviving River Traffic

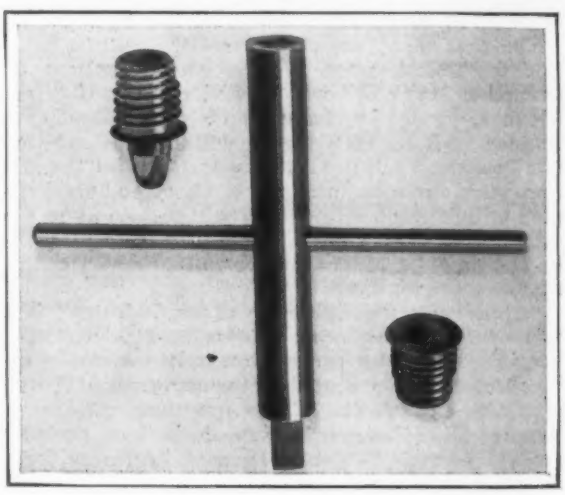
ST. LOUIS, Nov. 1.—The first effort in many years to revive water communication between St. Louis and Pittsburgh is being made by the Water Transport Co. (Anchor Line), whose towboat Transporter, towing 10 barges loaded with 8000 tons for Cincinnati and Louisville and a barge of steel products, including wire and nails for the Simmons Hardware Co., St. Louis, left Pittsburgh on last Wednesday.

The Anchor Line, which has operated towboats and barges on the Ohio River for the last two years, has announced that it will undertake to supply regular service between St. Louis and Pittsburgh, as well as the cities lying between the two on the Ohio River. It also is planning to extend the service South on the Mississippi to New Orleans. If the business justifies it, a regular two-week schedule between St. Louis and Pittsburgh will be maintained.

Screw Dowel for Patterns

A new screw dowel made of steel, and said to be rust proof, is being brought out by the Kindt-Collins Co., Cleveland. An important feature of this dowel is that it has a self-seating flange which seats in the surface of the pattern when the dowel is screwed into position. The dowel has a pilot at the end which is pressed into a bored hole. Above the pilot are deep, thin threads which screw into the wood. Inside the socket are four grooves into which the square end of a socket wrench fits. With the wrench the dowel is screwed in until the thin flange becomes flush with the surface of the wood.

The dowel pin is squared at the end, allowing the hollow end of the socket wrench to fit over the end for screwing the pin into the pattern. An important feature is that the squared shoulders of the pin automatically clean the socket of particles of sand, always allowing the patterns, or core boxes, to come into close contact. The dowel can be easily removed and replaced in a few seconds. Patents for the dowel have been applied for. It is being made in ¼ to 9-16 in., bit sizes.



The Dowel for Patterns Has Thin Threads for Screwing into the Wood and the Pin Has Squared Shoulders Calculated to Minimize the Interference of Sand Particles

The Trunk Line Freight Inspection Bureau, 13 Liberty Street, New York, has issued the following circular in regard to shipment of defective castings: "If shipments are offered for transportation described as 'defective castings having value for remelting purposes only' they should be billed at the specific rating applicable on 'castings' but if evidence is furnished, after arrival at destination that they are actually melted for the scrap content, this committee will raise no objection to the charges being reduced to the scrap iron ratings; per contra, if no such evidence is produced, the ratings for the specific kind of castings will maintain thereon."

CARNEGIE OPERATIONS

More Plants Put on Active List in the Mahoning District—Independents Show Little Change

YOUNGSTOWN, Nov. 1.—Operations are holding their own with the independents, while the Carnegie Steel Co. is enlarging its active capacity. A fifth blast furnace in the Ohio Works group of the Carnegie company is being warmed preparatory to its operation, while the sixth stack in this group will be placed on the active list as soon as repairs now under way are completed. This will give the Carnegie company six active blast furnaces in the Youngstown district, as compared with a low of two during the summer. It will then have but a single inactive furnace in the Mahoning Valley, that at Niles, which has been idle for several years.

It is likely that additional independent iron capacity will get under way before the end of the year, the Republic Iron & Steel Co. and the Brier Hill Steel Co. being prepared to start more furnaces as conditions justify.

Steel production this week is well sustained at 60 per cent, with 46 of 66 open hearth furnaces charged, including 34 of 51 independent units. This is an increase of three independent open hearths over the previous week. Two Bessemer departments, those of the Youngstown Sheet & Tube Co. and the Carnegie company, are active. Of the 113 sheet mills in the Mahoning Valley, 74 are under power, while 12 of the 17 pipe furnaces are fired.

The Carnegie company is pushing operations at its district plants closer to normal than they have been at any time this year, and announces that 5600 out of a normal working force of 6800 will shortly be employed. Its bar mills at the Upper and Lower Union Works and at the McDonald Works are operating on an enlarged scale.

The number of sheet mills in the Valley has been increased from 105 to 113 by the completion of eight mills at the Niles plant of the Republic Iron & Steel Co. Four of these new units were operated last week for the first time and are still engaged. The remaining four mills in the new complement are being completed.

Puddle mill operations continue unchanged, with virtually all of the 136 puddle furnaces in the Valley charged. Sheet mill production has shown slight fluctuations the past two months, the number of active units ranging from 75 to 85. Fabricating plants are on a much larger operating basis than in August, when the first signs of improvement were noted. The General Fireproofing Co., for instance, is reported engaged at 65 to 70 per cent, production being upheld by demand for fireproofing materials.

October shipments from the Sharon, Pa., plant of the National Malleable Castings Co. exceeded those of any month since last February. The company has received a number of substantial releases against coupler contracts.

Tin mills are operating at 60 per cent of normal, with the Liberty works of the Trumbull Steel Co. still idle. The price range is from $5 to $5.25 on production plate, indicating a recession from the higher figure which had been steadily upheld. Consumers are now largely interested in business for 1922. Due to the sparing manner in which orders were placed generally during the last six months, the tin plate market is holding up well during its ordinary slack period, say makers.

Increase in Employment in Chicago

Increases in industrial operations in Chicago in September gave employment to 11,060 more persons than were on the payrolls of 289 Chicago companies on Aug. 31, an increase of 7.9 per cent. During the entire period from May 31 to Aug. 31, the increase in employment amounted to only 8.9 per cent. The statistics are presented in a report issued by the General Advisory Board for Illinois Free Employment offices. The number of employees in the 289 plants which made returns totaled 151,172 on Sept. 30, as against 140,646 on Aug. 31. "Although this improvement," the report states, "is somewhat minimized by the fact that two large firms alone added nearly 10,000 employees, nevertheless a clear upward trend is seen in comparing the number of groups of industries which increased employment with those which reduced."

The statistics on employment conditions in the metal working field are not uniformly favorable. Under the heading "Pig Iron and Rolling Mill Products," 11 companies reported 1520 employees as of Aug. 31, as against 1494 as of Sept. 30, a decrease of 1.7 per cent. On the other hand, manufacturers of machinery (including electrical apparatus) numbering 26 companies, had 44,670 employees on Aug. 31, and 54,229 on Sept. 30, an increase of 21.4 per cent. Five companies manufacturing automobiles, carriages, and airplanes had 1289 on their payrolls on Aug. 31, and 1226 a month later, a decrease of 4.9 per cent. Car, locomotive and railway repair shops, numbering three, had 5001 employees on Aug. 31, and 5587 on Sept. 30, an increase of 11.7 per cent. Sheet metal working shops and hardware manufacturers, numbering 14, had an enrollment of 3233 on Aug. 31, and 3317 on Sept. 30, an increase of 2.6 per cent. Four structural and architectural iron work shops had 447 employees Aug. 31, and 564 a month later, an increase of 26.1 per cent.

Plant Operations

The Hendee Mfg. Co., Springfield, Mass., motorcycles, is operating on full time and with a normal number of workmen on its payroll. The company not only is booking encouraging orders for its new style motorcycles, but is doing a substantial business in last season's models as well and in parts. The company, however, anticipates marketing fewer machines this season than last, due to the general business situation.

The Rolls-Royce of America, Inc., Springfield, Mass., is confining its activities to assembling, exclusively. The number of men employed in assembling is below normal and finished cars are being turned out at 25 per cent of the plant's capacity, inasmuch as employees are working only part of each week. The company's business was good up until July. In August and September it practically was at a standstill, but there was a decided improvement in October, which, if continued, will necessitate a resumption of manufacturing departments within the near future. The company recently reduced wages.

The four hot mills of the Standard Tin Plate Co., Canonsburg, Pa., which have been idle, were started up Sunday night, Oct. 30. The plant now is running full and officials of the company say there is enough business in sight to maintain this gait to Jan. 1.

The Parkersburg Iron & Steel Co., Parkersburg, W Va., has resumed operations after a curtailment of several months. Employment will be given to about 500 men.

The Reading Iron Co., Reading, Pa., has arranged for the immediate resumption of production at its local Keystone furnace, with a weekly capacity of about 2000 tons.

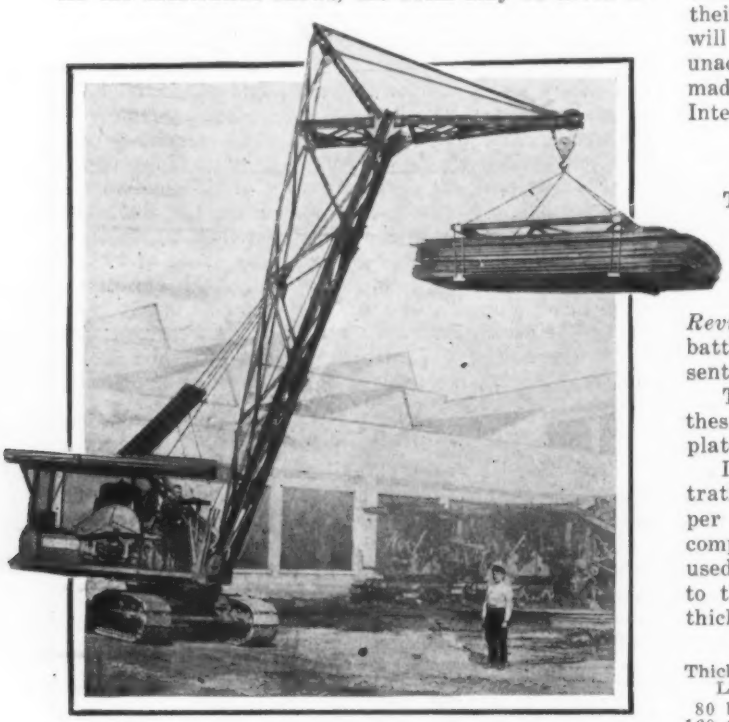
The Cumberland Steel Co., Cumberland, Md., has resumed operations at its plant, after a temporary shutdown due to refusal of employees to work under a new schedule. The company proposed a 50 per cent reduction in working force, 20 per cent reduction in wages, and 10-hr. working day. A compromise was effected by retaining the working force, to be divided into two shifts, each shift to work three 10-hr. days a week, and with 10 per cent wage reduction.

The H. B. Smith Co., Westfield, Mass., heaters and radiators, has converted a large store room at its north side plant into a molding room, and additional workers have been taken on.

The Bangor & Aroostook Railroad has leased its Houlton, Me., freight car repair shop to A. E. Astle, contractor, who began car repair work Nov. 1 for the railroad on a piece work basis. Men formerly employed by the railroad were asked by Mr. Astle to continue in service.

Crane with Goose Neck Boom

In adapting a crane of the type shown in the accompanying illustration to the handling of loads such as unit packages of lumber from high piles, it was found that the lengths of lumber interfered with the straight or standard crane boom. To overcome this and eliminate much of the labor required to handle lengths of lumber, pipe, etc., the Pawling & Harnischfeger Co., Milwaukee, developed the goose-neck boom. As the illustration shows, the boom may be lifted almost straight up without having the load interfere. In other respects this boom is like the standard design and attaches to the gasoline-driven corduroy-traction machine in a similar manner.



Gasoline-Driven, Corduroy-Traction Crane Equipped with a So-Called Goose-Neck Boom for Handling Loads Which Interfere with a Standard Straight Boom. The load shown is 18 ft. x 6 ft. x 31 in. and weighs 3 tons

The first plant using the goose-neck boom operated it for handling lumber in aisle-ways 18 ft. wide, taking lumber in unit packages from 20 ft. piles and placing on wagons or trailers spotted in the aisle-ways. The crane with the new boom requires only 10 laborers, it is explained, instead of 25 previously used, indicating a labor saving of $60 per day.

Lutz Co. Completes New Foundry

The Lutz Co., Morris and Bambrey streets, Philadelphia, has practically completed its new foundry building in Camden, N. J. In building the new plant, which is several times the size of the old one, it was found necessary to handle the work in such a manner as not to conflict with the work in the old building. The new building was therefore built over the top of the old one. The new foundry is 80 x 234 ft., with a clearance of 30 ft. under the crane runway. The Lutz Co. is now able to make castings from 2 to 20,000 lb. It specializes in hydraulic cylinders and hydrostatic equipment of various descriptions, as well as special machinery for steel mills and other industrial plants. One of its products is an acid-resisting casting, which is used by a large number of acid manufacturing companies as well as salt refining companies. The company has been engaged in the foundry business for 20 years.

The quarterly meeting of the Ohio State Foundrymen's Association will be held in Cleveland, on Monday, Nov. 7. This meeting was originally scheduled for Nov. 8, but on account of this being election day, the date was advanced. Samuel Powell, Jr., Hamilton, Ohio, is secretary of the association.

No Rate Reductions Without Wage Cut

The cancellation of the railroad strike orders was closely followed by the initiation of a poll of railroad executives on the question of a wage cut petition. This action is being taken notwithstanding the announcement of the United States Railroad Board that its docket is so crowded that there is no danger of immediate action on a new wage reduction. Railroad officers declare that the decision cancelling the strike order does not change the position of the railroads in their declarations regarding rate reductions. There will be no voluntary reduction in rates by the railroads unaccompanied by wage cuts. If any reductions are made, they state, they will have to come from the Interstate Commerce Commission.

British Versus German Armor Plate

Trials have recently been undertaken to test the quality of various types of German armor plates for the purpose of comparing them with plates of corresponding thickness manufactured in this country, says the London *Iron and Coal Trades Review*. The plates were obtained from the ex-German battleship Baden, and are, therefore, thoroughly representative of the German product.

The following table, setting forth the results of these trials, indicates marked superiority of British plates.

In the table the average limiting velocity of penetration for British plates is taken to be 1000 ft. per sec. in each case, and the third column shows the comparative figures for German plates. The shells used at these trials were of similar mark and quality to those used in testing British plates of the same thickness:

Thickness of Plate in Lb. Per Sq. In.	Index Number Representing Limiting Velocity of Penetration	
	British	German
80 bulkhead plate	1,000	1,000
160 turret roof plate	1,000	Less than 955*
200 turret roof plate	1,000	Less than 935*
320 K. c. armor	1,000	940
400 K. c. armor	1,000	Less than 895*
480 K. c. armor	1,000	Less than 835*
560 K. c. armor	1,000	915

*In these cases owing to the limited space available for attack, the velocities could not be taken low enough to determine the limiting velocity, the shells, at the velocities indicated by the index figures, passing on practically undamaged, except in the case of the 200-lb. roof plate.

Ball-Bearing Buffing Machines

The J. G. Blount Co., Everett, Mass., is offering a new line of buffing machines which are similar to those previously manufactured but are equipped with S K F ball bearings in dustproof mountings. They are built in three sizes, the medium size or No. 5 being shown in the accompanying illustration.

S K F Ball Bearings in Dustproof Mountings Are Used

Bearings are secured to the spindle by a light drive fit and also by locknuts. Spindles are of high-carbon steel, ground to size and are said to be carefully balanced before fitting to the head. A taper point is fitted to the right-hand end for use with small wheels. The head is mounted with the pan on the column, all parts bolting together being planed or milled.

The head can be furnished separately for mounting on a bench, if desired. Counter-shafts of either the regular self-oiling type or with Hyatt roller bearings can be furnished.

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ESTABLISHED 1855

THE IRON AGE

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Railroad Problem Remains

With the help of the Railroad Labor Board, the five railroad labor unions found the way they had been looking for, to call off the strike. Much as every buyer of food, clothing and other commodities has suffered and is still suffering from the excessive cost of transportation, due to excessive railroad labor cost, there is a feeling of relief that the public has been spared the calamity of a general suspension of traffic. Yet nothing has been determined by the so-called settlement of the strike issue, if we except the assurance the union leaders got from the Labor Board that any further effort to reduce railroad wages would be a long time in process, and that even the beginning of a hearing on such a proposal would not be reached until 1922 was well advanced.

Doubtless an important factor in the decision not to strike was the firm stand taken by Attorney General Daugherty, who let it be known that he would exercise his authority to the utmost to prevent any strike order from being carried out. This attitude of the Department of Justice drew an attack on the Attorney General from Samuel Gompers, president of the American Federation, who declared with much fervor that organized labor would call for the abolition of the Railroad Labor Board and the repeal of the transportation act of 1920. It is very likely that the issue will be clearly drawn on this subject, as the general sentiment of the country will be strongly in favor of making it impossible for railroad workers to combine in shutting off food and fuel supplies to impose their will upon the one hundred million people outside their ranks. Public sentiment has been plainly aroused by the happenings of the past two weeks. The strike was regarded as not against the railroads or the railroad executives, but rather as against the Railroad Labor Board, the Government and the public. Whatever opposition to the Labor Board or to the transportation act has developed outside the labor unions has sprung only from a desire to make the transportation act more effective in protecting the public.

As to the course of iron and steel manufacturers in regard to railroad rates, there is no doubt, as is shown in the action of Buffalo companies reported elsewhere in this issue in urging a reduction in rates on fuel. This is only one of many efforts that will be made to obtain more reasonable rates on the raw materials of the iron trade and on iron and steel products. The Association of Railway Executives has called attention to numerous reductions in commodity rates which have been made recently in addition to the reduction on grain and hay ordered by the Interstate Commerce Commission. Some of these reductions are: on live stock, 25 per cent; copper bullion, 25 per cent; lumber from the Pacific Coast, 10 per cent; cotton from the Gulf to New York, 20 to 25 per cent, with numerous reductions on rates from the Pacific Coast on fruit, vegetables and canned goods. It is also pointed out that other reductions are proposed to meet steamship competition through the Panama Canal. Under these circumstances there will be no abatement of the effort of the steel industry for relief from existing high freight rates.

The situation is in some respects parallel to that which existed 18 months ago when the deflation of commodity prices had just begun. It was common to say that prices could not come down until the manufacturer's costs had come down, and the jobber had moved his stocks bought at high prices, and the retailer had emptied his shelves of all that he had bought at high levels. But it was demonstrated over and over, all along the line, that prices could come down without any of the supposedly necessary preliminaries being complied with, and must come down because the buyer would no longer pay them.

The readjustment of freight rates will be no exception to the process that has been working out in commodity markets. Since freight rate reductions are now called for by practically every industry, beginning with agriculture, and are regarded as essential to further progress in the readjustment of prices, other freight rate reductions will come. They may become the cause of further railroad wage reductions, rather than effects of such reductions, as the railroad executives intended; but in that particular they will

not differ from the reductions in prices of steel products (apart from rails) which preceded rather than followed reductions in steel works wages.

Alloy Steel for Bridges

The use of alloy steel for bridges has received some attention in Germany. About nine years ago one was designed and erected to determine the possible savings from the use of nickel-chrome steel instead of mild steel. It is described by the monthly organ of Krupps as a single line railroad bridge thirty meters at the widest span, with a through track and designed for the heaviest loads. The main girders are of nickel-chrome steel and the weight is reported as 35 per cent less than if mild steel had been used. No difficulty in machining developed and the usual trial load on the completed bridge gave deflections in satisfactory agreement with those theoretically calculated, the deflection dropping to zero after the load was removed. It is stated that this bridge has been in use over nine years with entire satisfaction, that no repairs have been necessary and that nickel-chrome steel has proved to be a suitable material giving low weight without loss of safety.

In the United States very little has been done in alloy steel for bridges. The most prominent example is the Williamsburg bridge over the East River at New York, in which there was a large use of nickel steel eyebars. The departure was widely commented on at the time. The expense of fabrication and heat treatment of these alloy eyebars was extremely heavy.

There have been built in the last few years several American bridges of what may be termed silicon steel. This is mild steel with about 0.20 to 0.25 per cent silicon. It can be rolled in sections of lighter weight than straight mild steel and still possess the same strength. Its use is confined, however, to conditions where there is rigidity and but little vibration. It may be recalled that the Lusitania and Mauretania were built of silicon steel. Due to vibration, however, the structures of both had to be reinforced.

It is not improbable that alloy steel bridges will play an important rôle in the future. While the more expensive alloys may not be extensively used in this way, there are indications that others, less expensive and similar to the silicon alloy, may be increasingly employed.

Two facts stand out prominently in Great Britain's foreign trade in iron and steel for September, analyzed elsewhere in this issue: the sharp rise in exports and the large volume of imports. September exports at 138,248 gross tons were nearly twice those for July or August and even exceeded those for the United States in September at 95,169 tons, the first time British exports have led in many months. Steel rails, galvanized sheets and tin plates were the chief items in the British shipments in September. But in the imports are found the most striking data. The total at 229,391 tons exceeded any receipts in many years, even the monthly pre-war rate of 195,264 tons in 1913. The feature of the September imports, however, was the 120,806 tons of pig iron, bringing the pig iron total for the first quarter to over 224,000 tons. In 1907 British exports of pig iron were nearly 2,000,000 tons and just before the war they were about 1,250,000 tons per year, as shown by the London *Iron and Coal Trades Review*. So great has been the reversal, due to the coal strike and high costs, that the September imports were at the rate of nearly 1,500,000 tons per year. These figures illustrate impressively what high fuel and war labor costs can do to a great industry.

Steel Company Earnings

Such widely different showings are made by the earnings reports of various steel producing companies that one is prompted to inquire into the causes, whether there are great differences in methods or economy of operation, or in the volume of business done or in the accounting practices. For instance, one large independent steel company showed an operating loss for the third quarter, before allowance for depreciation or bond interest, while another large independent steel company for the same period showed all stock dividends earned. The Steel Corporation showed earnings equal to depreciation, bond interest, sinking funds and nearly all of the preferred dividend.

There should be a proper regard for perspective in commenting on the advantages or disadvantages of one steel producing interest as compared with another, in analyzing earnings possibilities at this time. The differentials of one time should not be applied to another time which presents very different conditions. Prior to the war a single dollar a ton in a finished steel price was an important thing, while lately prices have been moving by many dollars a ton. In the buying movements of 1909 and 1912, which were important affairs, seeing that they were three years apart, finished steel prices advanced by only $5 to $10 a ton. Since 1913 steel prices have gone up and down by several times $10 a ton.

As a rule the disadvantage or advantage of one large steel producing interest as compared with another before the war was a matter of only a few dollars a ton, and a few dollars a ton nowadays would entirely fail to explain differences in earnings statements. It is conceded, and is indeed more or less insisted upon by the independents, that the Steel Corporation is in the best position. Now in the ten years 1904 to 1913 inclusive the Steel Corporation's production of steel products for sale divided into the total earnings reported after payment of subsidiary company bond interest produced amounts varying from $15.51 in 1907 to $8.65 in 1912. The average for the ten years was $12.61. During the ten years the independents made money, and their disadvantage could be only a relatively small fraction of $12.61.

For last September the Steel Corporation's reported earnings divided by an estimate of the tons shipped gives a quotient of about $15. How many dollars should be deducted from this to

represent the "disadvantage" of the typical independent?

Differences in accounting practices, however, can explain a great deal, even more than the entire $15 a ton. One readily recalls the amazement created in some quarters by the Steel Corporation's heavy and apparently extremely radical allowances in 1920, the great reduction in inventory valuations, the extra lump sum allowance for future inventory shrinkage, and the deductions from profits for excess cost of construction work done under war-time conditions and costs. If an independent steel company did not make corresponding allowances or deductions in 1920 it has been necessary to do so this year. The sums are large in all cases and if any considerable fraction is set against the tons of steel shipped in the September quarter the number of dollars per ton is large. The real operating cost of producing steel is entirely covered.

The way in which the heavy deductions the Steel Corporation made in 1920 have been of help to this year's statements is illustrated in the item of "charges and allowances for depreciation and sinking funds." For the second quarter of this year this amount was $8,665,000; in the corresponding statement of 1920 it was $11,467,000. For the third quarter, as published last week, it was $8,143,000, against $12,312,000 in the third quarter of 1920.

The reports of earnings, or in many cases the reports of "losses," are not to be taken as indicating that the steel companies involved cannot, in the long run, make steel at costs per ton that will enable them to compete in the open market as long as the best positioned producers are making anything like fair profits. It is far from impossible that some steel companies may be unable to weather the competition comfortably, but none should be judged in this matter by any financial statement covering but a short period of time.

The impression prevails in some quarters that the electric furnace has practically supplanted the crucible for the production of fine steels. Many crucible steel makers have displaced crucible with electric melting, wholly or in part. The belief that the crucible has seen its day was expressed in the first article in THE IRON AGE of last week, the two authors making rather summary work of it in saying that this melting medium, "alive and well since 1740, is passing, dying, may be, of senile decay." There are those who do not subscribe to this statement, for at least two or three prominent makers of fine steel still maintain a crucible department supplementing their electric steel operation. While the curve representing electric steel output shot upward steeply during the war period, that of crucible steel by no means declined in proportion, particularly the curve for ingots. A leading American authority on fine steel production is firm in the opinion that, for certain grades of fine steels poured in small ingots, direct pouring from the crucible cannot be equaled by the electric process with its pouring from a ladle, and that for a considerable time there will be a demand for small crucible steel ingots. The belief exists that something besides chemical purity is involved in this question and that there is a mysterious quality or "virtue" in crucible steel. Perhaps the most significant feature of this belief is its emphasis on the fact that the ingot and its pouring are vital factors in the question of quality, no matter what the process.

Iron and Steel Rail History

Announcement last week of a common price of $40 for Bessemer and open-hearth rails recalls the very interesting statistical history of these two products and also that of iron rails. The open-hearth rail was not an important factor for a good many years after the total of open-hearth ingots had become considerable. Until 1877 more iron rails than steel were rolled, and it was not until 1883 that the mileage of steel rails in track exceeded that of iron rails—78,491 miles against 70,692 miles. In 1879 the production of Bessemer rails was 610,682 gross tons, while only 8168 tons of open-hearth rails were rolled, and the production of iron rails was 375,143 tons. In 1883 the production of open-hearth rails was 8202 tons and that of iron rails had declined to 57,994 tons, while the output of Bessemer rails was 1,148,709 tons. In 1890 production of Bessemer rails was 1,867,837, that of iron rails 13,882 tons and that of open-hearth rails 3588 tons. Production of open-hearth rails increased until in 1907 it amounted to 252,704 tons, while 3,380,025 tons of Bessemer rails were rolled and only 925 tons of iron. Open-hearth, with a production of 1,676,923 tons, passed Bessemer in 1911, when the Bessemer output was 1,053,420 tons. The open-hearth output reached its highest point in 1913 with 2,527,710 tons compared with 817,591 tons of Bessemer. Manufacture of iron rails ended with 234 tons in 1911. Bessemer tonnage declined in 1920 to 142,899 compared with 2,334,222 of open-hearth. A considerable part of the Bessemer tonnage now rolled is light rails.

In 1906 the price of open-hearth rails was fixed at $2 higher than that of Bessemer rails. The latter had been selling since 1901 at $28 and the price was not changed until May, 1916, when there was an advance of $5. The differential of $2 was maintained by independent companies until last week, although recently ignored by the Steel Corporation. If the new price of $40 be compared with $30 before the war, it represents very nearly the same percentage above the pre-war price as is now maintained on other steel products.

Holley many years ago predicted that the open-hearth would one day attend the funeral of the Bessemer converter, and more recently the passing of the Bessemer has been predicted on the basis of its diminishing percentage, the production of open-hearth steel in 1920 having been 32,671,895 tons, compared with 8,883,087 tons of Bessemer. As has been pointed out frequently, the employment of the Bessemer process in making steel for certain purposes is likely to continue. The clean threading of Bessemer steel pipe commends it, and British importers of American skelp continue to call for the Bessemer product. The advantage of Bessemer steel in rolling tin plate

and sheets is also well known. And as long as duplexing continues to expand, with its large outputs, its freedom from dependence on scrap and its necessary employment where the only available ores run up silicon beyond the basic limit, there will still be a call for the Bessemer converter.

The American Railway Association's committee on car trucks has made a departure in recommending the use on 50-ton cars of a certain design of springs made of alloy steel, in place of the present coil springs of high carbon steel. The performance of the latter has been unsatisfactory for some time on trucks under 50-ton cars and a chrome-molybdenum steel has been suggested. This action seems to indicate that the prejudice of individual railroads against alloy steels, based on the difficulties of proper heat treatment, has been in a measure overcome. The strides made recently in the art of heat treatment doubtless have had weight, for the popularity and efficiency of alloy steels have been enhanced by the assurance that for each grade of steel a definite heat treatment can be prescribed, assuring dependable results. Not only in railroad but in other lines, engineers are likely to turn more and more to alloy steels, properly heat treated, for the solution of some difficult problems.

CANADA MAKES NEW RULING

Dominion Government Will Use Iron Age Quotations Under Anti-Dumping Act

TORONTO, Nov. 1.—Sir Henry Drayton, the Minister of Finance and Inland Revenue, has promulgated a new regulation affecting shipments of steel from American mills into Canada. The regulation reads substantially as follows:

> In view of the refusal of representative exporters in the United States to furnish the department with production costs on basic steel products, you are instructed under the provisions of the amendments of the customs act as to production cost plus a reasonable profit, to appraise importation of basic steel products of the United States at not less than the values given in THE IRON AGE as of dates of shipment plus 10 per cent, with the application of sales tax, ad valorem duty where applicable, and dumping duty on that basis.

To recite the reasons for this action, your readers are referred to the dispatch from Toronto in THE IRON AGE of July 21, 1921 (page 134) which mentioned the adoption of the following amendment to the Canadian customs act:

> Provided that the value for duty of new or unused goods shall be in no case less than the actual cost of production of similar goods at date of shipment direct to Canada, plus a reasonable profit thereon, and the Minister of Customs and Inland Revenue shall be the sole judge of what shall constitute a reasonable profit in the circumstances.

This amendment, which was recommended by Sir Henry Drayton, went into effect on June 30, last. Under this ruling American mills have been obliged to make affidavit on each invoice to the following effect:

> We certify that the fair market value as shown on this invoice is not less than the cost of production of similar goods on the date of shipment to Canada, plus a reasonable profit thereon.

Some shipments from the United States are alleged to have been made at prices considerably lower than those quoted in the trade papers as representing the United States home consumption market values. In one instance, at least, the disparity on tin plate between the published home consumption price and the price at which the shipment was sold in Canada was so great that the mill was asked to show its production costs, which it is said to have refused to do.

The trade here believes that the new regulation will be very effective in keeping out American steel. If, for example, the published price of steel plates is 1.60c., Pittsburgh, there will be added to this 10 per cent, making 1.76c., Pittsburgh, as the minimum at which sales can be made into Canada, and to this price will be added the sales tax, ad valorem duty where applicable and a dumping duty should one still be necessary. The anti-dumping law requires American goods to be sold here within 5 per cent of the selling price in the United States.

BETHLEHEM EARNS DIVIDENDS

Surplus for Quarter More Than Sufficient to Meet Regular Disbursements

The Bethlehem Steel Corporation in the third quarter of 1921 earned a surplus more than sufficient to pay the 1¼ per cent quarterly dividend on the common stock, which was declared last week, payable Jan. 2, 1922, to stockholders of record Dec. 15, 1921.

Eugene G. Grace, president of the company, stated after the meeting of directors that the earnings for the third quarter, like the first six months, were in excess of the dividend on the common stock, after providing for dividends on both classes of preferred stock.

He said that the value of orders on the corporation's books, as of Sept. 30, was $70,000,000, compared with $84,000,000 on June 30. Although the amount of new business booked during the quarter was $14,000,000 less than billings, this compared with a similar item the preceding quarter of $26,000,000. The orders for the steel plants, Mr. Grace said, were the largest of any quarter to date this year.

Mr. Grace stated that the Bethlehem interests will meet the new rail price of $40 a ton recently established by the United States Steel Corporation.

The Iron Age and Its Readers

THE IRON AGE of Oct. 20, with its report of the American Gear Manufacturers' Rochester meeting, emphasizes again the position of THE IRON AGE as the premier convention paper of the metal-working industries. Gathering the fruits of a convention and making them of lasting use to the trade represented is a service to which THE IRON AGE has devoted itself in a special way.

In the same issue was reported the meeting in Birmingham, England, of the British Institute of Metals, and the first part of the New York meeting of the National Machine Tool Builders' Association, the second part appearing Oct. 27. Leading features in point of commercial, economical and technical information were published in these two issues gained from meetings of the National Implement and Vehicle Association, the American Mining Congress, the National Conference of Business Paper Editors, the National Association of Purchasing Agents, the Industrial Cost Association and the metal section of the National Hardware Association.

IRON OUTPUT UP SHARPLY

October Production 7155 Tons Per Day Larger Than That of September

Net Gain of 14 Furnaces Greatest This Year

Data collected by telegraph covering the output of blast furnaces in October show a decided improvement over the production in September. The gain per day of 7155 tons compares with gains in August and September of 2070 tons and 2891 tons per day respectively. For the first time in over four months the total output has passed the one million mark.

The production of coke and anthracite furnaces for the 31 days in October amounted to 1,240,162 gross tons or 40,005 tons per day as compared with 985,529 tons or 32,850 tons per day in September, a 30-day month. The October output is the fourth largest for the year, exceeding all the months except those of the first quarter.

The total number of furnaces in blast on Nov. 1 was 96 as compared with 82 on Oct. 1, with 70 on Sept. 1 and 69 on Aug. 1, the low point in the recent decline. On Jan. 1 this year there were 201 furnaces in blast. Seventeen furnaces were blown in and only 3 blown out or banked during October, a net gain of 14, which compares with a gain of 12 furnaces in September.

A computation of the capacity in blast Nov. 1 is difficult in view of the compilation of the production figures on the first day of the month. It is roughly estimated that the 96 furnaces in blast Nov. 1 were then producing about 43,500 tons per day.

The October output of manganese-alloy was only 3902 tons, all of it ferromanganese, no spiegeleisen having been made in several months.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from October, 1920, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons

1920	Steel Works	Merchant	Total
October	77,214	28,998	106,212
November	71,669	26,161	97,830
December	66,037	20,185	87,222
January, 1921	62,327	15,618	77,945
February	58,060	11,127	69,187
March	42,691	8,777	51,468
April	33,854	5,914	39,768
May	33,054	6,340	39,394
June	29,444	6,050	35,494
July	23,086	4,803	27,889
August	26,037	4,743	30,780
September	27,189	5,661	32,850
October	33,162	6,843	40,005

The figures for daily average production, beginning with January, 1915, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1915—Gross Tons

	1915	1916	1917	1918	1919	1920	1921
Jan.	51,659	102,746	101,643	77,799	106,525	97,264	77,945
Feb.	59,813	106,456	94,473	82,835	105,006	102,720	69,187
Mar.	66,575	107,667	104,882	103,648	99,685	108,900	51,468
Apr.	70,550	107,592	111,165	109,607	82,607	91,327	39,768
May	73,015	108,422	110,238	111,175	68,002	96,312	39,394
June	79,361	107,053	109,002	110,793	70,495	101,451	35,494
July	82,691	104,017	107,820	110,354	78,340	98,931	27,889
Aug.	89,666	103,346	104,772	109,341	88,496	101,529	30,780
Sept.	95,085	106,745	104,465	113,942	82,932	104,310	32,850
Oct.	100,822	113,189	106,550	112,482	60,115	106,212	40,005
Nov.	101,244	110,394	106,859	111,802	79,745	97,830	.....
Dec.	103,333	102,537	92,997	110,762	84,944	87,222	.....

Among the furnaces blown out or banked during the month were the following:

One Buffalo furnace of M. A. Hanna Co. in the Buffalo district; G furnace of the Bethlehem Steel Co. in the Lehigh Valley; and No. 4 Joliet furnace of the Illinois Steel Co. in Illinois.

Among the furnaces blown in during the month were the following:

One Donner furnace, one Susquehanna furnace and the Northern furnace in New York State; D furnace of the Bethlehem Steel Co. and the Saucon furnace of the Thomas Iron Co. in the Lehigh Valley; one Aliquippa and one Eliza furnace of the Jones & Laughlin Steel Co. in the Pittsburgh district; one LaBelle furnace in the Wheeling district; one Ohio furnace of the Carnegie Steel Co. in the Mahoning Valley; Nos. 5 and 9 South Chicago (new) furnaces of the Illinois Steel Co. in Illinois and the Mark furnace in Indiana; one furnace of the Woodward Iron Co. and one furnace of the Alabama Co. as well as one Pioneer furnace of the Republic Iron & Steel Co. in Alabama and the Rockdale furnace in Tennessee. The Keystone furnace in the Schuylkill Valley blew in Oct. 31.

Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the following totals of steel making iron, month by month, together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total Production			Spiegeleisen and Ferromanganese		
	1919	1920	1921	1919	1920	1921
Jan.	2,430,022	2,232,455	1,932,159	32,787	23,957	22,228
Feb.	2,209,470	2,181,679	1,625,695	28,105	28,038	29,013
Mar.	2,277,507	2,480,668	1,323,443	26,644	35,275	41,294
Apr.	1,838,677	1,968,542	1,015,621	17,308	27,628	24,310
May	1,586,805	1,128,720	1,024,678	14,604	33,407	9,232
June	1,655,944	2,209,770	883,312	14,254	34,751	4,536
July	1,906,604	2,230,567	715,664	14,805	36,789	5,524
Aug.	2,108,566	2,254,943	807,144	17,419	36,985	3,878
Sept.	1,828,613	2,247,250	815,692	20,631	39,546	3,289
Oct.	1,295,690	2,393,644	1,028,044	20,238	34,786	3,902
Nov.	1,727,656	2,150,075	.....	19,964	26,944	....
Dec.	1,916,249	2,047,167	.....	15,718	28,023	....

Output by Districts

The accompanying table gives the production of all coke and anthracite furnaces for October, and the three months preceding:

Pig Iron Production by Districts, Gross Tons

	October (31 days)	September (30 days)	August (31 days)	July (31 days)
New York	65,487	50,970	44,948	34,407
New Jersey	4,745	4,370	4,689	5,554
Lehigh Valley	27,614	27,566	33,014	24,059
Schuylkill Valley	28,176	23,126	20,735	19,210
Lower Susquehanna and Lebanon Valleys	20,581	21,903	23,939	20,401
Pittsburgh district	295,741	250,128	255,274	185,643
Shenango Valley	35,410	8,649	none	none
Western Penna.	61,794	60,073	47,565	47,680
Maryland, Virginia and Kentucky	15,827	16,046	15,470	14,201
Wheeling district	31,265	18,706	18,076	16,167
Mahoning Valley	157,501	125,705	111,722	92,305
Central and Northern Ohio	140,731	110,327	83,552	80,150
Southern Ohio	14,400	8,200	3,548	6,266
Illinois and Indiana	228,028	171,380	191,658	201,175
Mich., Minn., Mo., Wis., Colo. and Wash.	11,940	14,641	27,304	50,764
Alabama	99,932	73,739	72,699	66,573
Tennessee	990	none	none	none
Total	1,240,162	985,529	954,193	864,555

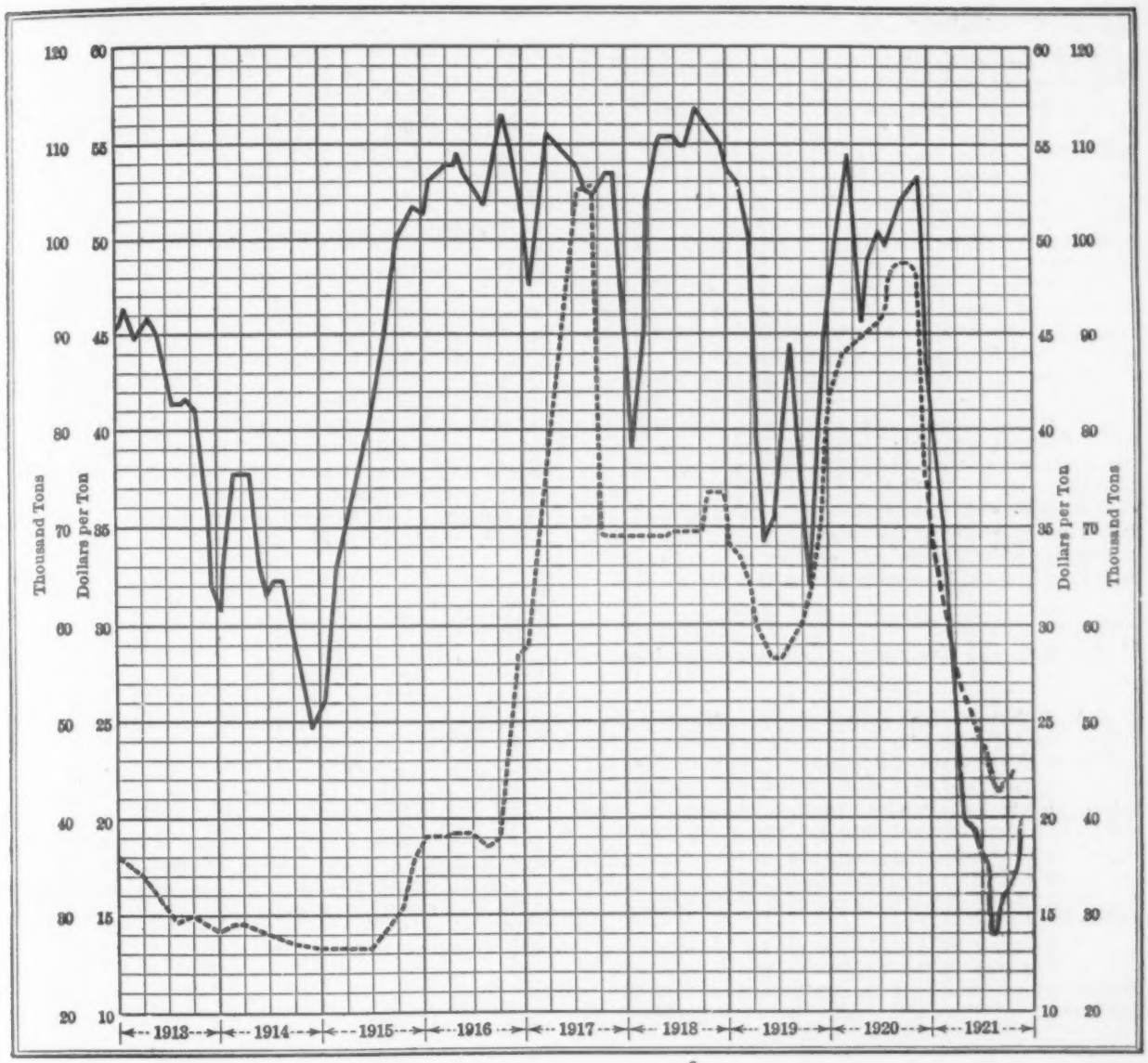
Diagram of Pig Iron Production and Prices

The fluctuations in pig iron production from 1913 to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnace in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in the United States by Months, Beginning Jan. 1, 1917—Gross Tons

	1917	1918	1919	1920	1921
Jan.	3,150,938	2,411,768	3,302,260	3,015,181	2,416,292
Feb.	2,656,247	2,319,299	2,940,168	2,978,879	1,937,257
Mar.	3,271,352	3,213,091	3,090,243	3,375,907	1,595,522
Apr.	3,334,960	3,288,211	2,478,218	2,739,797	1,193,041
May	3,417,340	3,446,412	2,108,056	2,985,682	1,221,221
June	3,270,055	3,323,791	2,114,863	3,043,540	1,064,833
July	3,342,438	3,420,988	2,428,541	3,067,043	864,555
Aug.	3,247,947	3,389,585	2,743,388	3,147,402	954,193
Sept.	3,133,954	3,418,270	2,487,965	3,129,323	985,529
Oct.	3,303,038	3,486,941	1,863,558	3,292,597	1,240,162
10 mos.	32,097,269	31,718,356	25,557,260	30,775,351	13,472,605
Nov.	3,205,794	3,354,074	2,392,350	2,934,908	.....
Dec.	2,882,918	3,433,617	2,633,268	2,703,855	.....
Ttl. yr.*	38,185,981	38,506,047	30,582,878	36,414,114	.....

*These totals do not include charcoal pig iron. The 1920 production of this iron was 323,396 tons.



The Full Line Represents the Daily Production of Pig Iron and the Dotted Line Is the Average of the Price Per Ton of No. 2 Southern Pig Iron at Cincinnati, Local No. 2 Iron at Chicago and No. 2X Iron at Philadelphia

REDUCING LOSSES

Some Improvement in the Valleys, but Conditions Far from Satisfactory

YOUNGSTOWN, Nov. 1.—Indications are that the final quarter of 1921 will be more profitable for iron and steel interests from an operating standpoint than either the second or third quarters. All of the larger independent companies will close the year with substantial operating losses. Enlargement of active capacity and strengthening of some finished steel prices, especially all grades of sheets, of which the Valley is a heavy producer, will serve in the fourth quarter to reduce losses. It is hardly likely, though, in view of the present state of the market, that any of the larger steel makers will register a profit on the last three months' operation of 1921.

Independent capacity in the Mahoning Valley is engaged to the extent of between 50 and 60 per cent, as the industry enters November. October business and shipments exceeded expectations of several large producers. To offset operating losses, a determined effort is being made to bolster prices, though this is not meeting with universal support. This is notably true in sheets.

Naturally, the likelihood of a general freight rate reduction overshadows all other considerations. Both producers and buyers are figuring what effect an expected 25 per cent reduction in freight charges would have upon costs and the market. Undoubtedly producers will endeavor to hold prices as firm as possible in view of their contention that operating losses have been encountered for the past eight to nine months, but their success in this respect will be largely measured by competitive conditions.

Delivered prices will be immediately affected, the buyer getting the benefit any rate reduction may entail. Leading executives are cautious in predicting what effect a general freight rate cut may have upon the steel structure, and prefer to feel their way. In this as in many other problems, they are largely guided by day-to-day developments.

In the Youngstown district, the steel industry is operating from 25 to 30 per cent better than during the low point reached in July. Employment is consequently better distributed. The total of those wholly unemployed is much below the estimates of employment bureau managers.

In view of uncertainties created by the railroad situation, however, managers are not certain that the current operating rate will be maintained. An encouraging feature, from producers' standpoint, is the depletion of stocks of jobbers and manufacturing consumers. Another is the fact that the railroads will enter the market more actively when some of the immediate problems affecting transportation are solved.

While 1921 has therefore been a year of disappointments, it is expected that 1922 will definitely mark the beginning of a prosperous era for the industry.

An index to the situation may be found in the action of the Carnegie Steel Co. in preparing the fifth blast furnace at the Ohio Works for resumption. Repairs are being made to the sixth stack, which will likewise be operated as soon as they are completed. During the summer the Carnegie company operated but two blast furnaces in this group.

Puddlers' Wages Reduced

Shipments of bar iron from Mid-West independent mills affiliated with the Western Bar Iron Association for the 60-day period ending Oct. 20 averaged 1.70c. per lb. in price. This is a reduction from 1.85c., the average price for the preceding 60-day period. As a consequence, puddlers' wages will be reduced to $8.43 per ton for the November-December period, from $9.12, the rate paid in September and October. Wages of guide mill workers are reduced from 39½ per cent above base to 32½ per cent.

The decline in price of bar iron on actual shipments is, therefore, $3 per ton. At each succeeding bimonthly settlement this year, to determine the tonnage rate for puddlers and finishing hands, there has been a progressive decline in the selling price of bar iron, and consequently in the tonnage rates paid affected workers.

The examination of sales sheets was conducted Oct. 27 at Youngstown, Ohio, James H. Nutt, secretary of the Western Bar Iron Association, acting for the manufacturers and M. F. Tighe of Pittsburgh, president of the Amalgamated Association of Iron, Steel and Tin Workers, representing the employees. Non-union mills ordinarily adjust their tonnage rates on the basis established by the bimonthly settlements.

Unemployment Committee Organized in Massachusetts

Col. Arthur Woods, acting for the standing committee of the President's unemployment conference, reports that the Governor of Massachusetts has organized an emergency unemployment committee called the Massachusetts Committee to Promote Work, under the chairmanship of Howard Coonley, Walworth Mfg. Co., with James Jackson, State treasurer, as secretary. The committee estimates the total of unemployed in Massachusetts at about 300,000 compared to a normal unemployment of about 70,000.

The Standard Oil Co. of New Jersey has announced that in response to the request of the unemployment conference it is undertaking improvements to its plant and equipment that will enable it to re-employ some 5000 of its former workers who have been laid off entirely or for part time during the last few months.

Extra Helper Laid Off

Independent sheet mill interests which are affiliated with the Western Sheet and Tin Plate Manufacturers' Association and operate their plants under agreement with the Amalgamated Association of Iron, Steel and Tin Workers have laid off the "extra hand" on mill crews, as provided in the annual agreement. One of the obstacles to the signing of the wage contract last summer was the extra helper, added during the war. Employers insisted upon his elimination in their effort to pare operating costs, while representatives of employees contended for his retention. A compromise was finally reached, whereby the helper is retained during the six months from April 1 to Oct. 1, but is dispensed with during the remaining six months.

Urges National Labor Tribunal

"Industrial squabbles are the worst menace which this country faces to-day," said Henry J. Allen, governor of Kansas, in an address before the convention of the Audit Bureau of Circulations at Hotel La Salle, Chicago, on Oct. 28. "Kansas faced the same situation two years ago and met it successfully with an industrial tribunal for the settlement of disputes between capital and labor. Such a tribunal placed on the statute books of the nation to-day would bring industrial peace.

"We are paying too many men to-day to do one man's work," he said; "we have been bound too long by the radical in the labor group who is responsible for the theory under which labor works, namely, 'doing as little as you can for the most you can get.' That is the kind of radical leadership which has killed the goose that laid the golden egg."

In touching upon the advantages of a national industrial tribunal, he said: "We could then say to labor and to the employer, 'if you cannot settle your quarrels without bringing civil war on the helpless public, then this Government will do it for you'."

Less Unemployment in Pennsylvania

The semi-monthly report of the Pennsylvania State Department of Labor and Industry covering unemployment, as of Oct. 15, shows considerable improvement in most districts. In the Pittsburgh district the report shows that almost 6000 persons found employment between Oct. 1 and Oct. 15, this being explained not only by more building and public work but also by the fact that almost all of the steel plants in the district have put on additional workmen. The only districts where increases in unemployment were recorded were Williamsport and Philadelphia. The following table gives the number of unemployed in the various districts on Oct. 15, Oct. 1, and Sept. 15:

	Oct. 15	Oct. 1	Sept. 15
Altoona	15,020	16,310	17,585
Erie	14,150	14,850	15,675
Harrisburg	11,650	12,885	13,300
Johnstown	10,440	12,640	13,640
McKeesport	4,290	4,740	4,915
New Kensington	5,900	6,750	6,050
Philadelphia: Men	130,000	127,000	126,000
Women	12,350	11,950	12,150
Pittsburgh	54,050	60,800	58,800
Scranton	13,575	14,900	15,225
Wiilliamsport	6,150	5,800	5,600

Employment in St. Louis

ST. LOUIS, Nov. 1.—Replies received from questionnaires addressed by the Eighth Federal Reserve Bank to 210 leading employers in 21 of the largest cities in the district, with an estimated normal complement of 193,720 workers, asking for employment data developed the following results:

Date		Number of Wage Earners	Pay Roll
Sept. 1, 1920	Men	191,285	
	Women	17,940	
	Total	209,225	$17,948,421.81
Sept. 1, 1921	Men	145,163	
	Women	16,742	
	Total	161,905	$12,020,275.96

From the above tabulation it will be noted that the number of employees of the reporting interests decreased 47,320 or 22.6 per cent between the dates Sept. 1, 1920, and Sept. 1, 1921. On Sept. 1, 1920 the number was 15,505 or 8 per cent above normal and on Sept. 1, 1921, the total was 31,815 or 16.4 per cent under normal. Wages figured on a semi-monthly basis decreased $5,928,145.85 or 33 per cent between Sept. 1, 1920 and Sept. 1, 1921.

On July 1, 1921, the total number of wage earners was 27.4 per cent under normal.

Rejected by Union Labor

ST. LOUIS, Nov. 1.—William Sacks, a St. Louis capitalist, and the Selden-Breck Construction Co., offered to build a $5,000,000 hotel in St. Louis, if union labor would agree to reduce wages 30 per cent. The proposal was rejected by the Building Trades Council.

Mills in the Youngstown district of the Carnegie Steel Co. are now operating six days a week, instead of five as during the summer. Steel production is averaging 65 to 70 per cent of maximum. Some of the iron tonnage from the fourth blast furnace in the Ohio works group at Youngstown, recently placed in operation, is required for current use. The company is operating an average of 12 out of 15 open-hearth furnaces at Youngstown, while its Bessemer department is turning out nearly the maximum number of heats per turn.

TROUBLES DEFERRED

Much Uncertainty as to What Will Be Done In Regard to Railroad Rates and Wages

WASHINGTON, Nov. 1.—No assurance having been held out to the railroads that further wage reductions may be considered at an early date as the result of the calling off of the threatened strike, iron and steel and other shippers are showing concern as to what the effect may be with regard to getting reduction in rates. Not only is it felt that inability of the carriers to cut expenses for the present by lowering wages will at least check the tendency toward reduced rates, but that likewise it will delay purchases of supplies, a vastly important matter to the iron and steel industry, and particularly so at this time of light business. It is conceded that the financial condition of the carriers is far from satisfactory and that on account of this they are provided with an argument against making cuts in rates that would further endanger their treasuries.

Encouragement is derived from the fact that they are making somewhat better net returns, though still below sound business requirements, and hope is entertained that they will continue to reflect improvement. This necessarily is a matter of uncertainty. Part of the better showing is due to the cut of 12 per cent made in wages last July as the result of the decision of the Railroad Labor Board, but the full effect one way or the other, it is believed, remains to be determined in view of the fact that increased traffic did not develop until August, and consequently has not yet had time to give a clear idea as to what the effect will be It is plain, however, the railroad returns indicate, that the carriers must be relieved of their present heavy expenses, and the only way to bring this about to the required degree is to reduce wages further, so that railroad labor will have shared with other lines of work in returning to a lower scale.

Necessity of Lower Rates

The necessity of general reduction in rates is firmly fixed in the minds of shippers, including iron and steel interests, and they contend that restoration of normal business conditions cannot possibly be expected until their costs have been lowered through cheaper transportation. While the financial position of the carriers is recognized, there are considerations taken into account by shippers to offset it. For one thing they are of the opinion that they should get greater benefit than so far has been given the industry from the reduction of wages in July and because of lower costs of iron and steel and fuel of which the railroads are such large users. Furthermore, it is maintained that lower rates will increase the volume of traffic and yield greater revenue where the rates are not under the cost of transportation. Present rates on coal, coke, and iron and steel are held to be much higher than are justified.

Settlement Disappointing

It is because of the fact that the question of general rate reductions has been left in the controversial stage that regret has been expressed that the strike situation was not settled definitely. As it is, the opinion prevails that it only has been postponed and will again face the country and the Railroad Labor Board. Hope had been felt that the board would be able to lay down a specific line of permanent settlement which would carry with it assurance that the carriers would be able to get quick action on an application to reduce wages. Instead, however, it was made known that this subject will not come before the board for some time and that the board will take up other pending questions first, such as working rules and regulations, the outcome of which, no matter how favorable it may be to the carriers, cannot possibly have the far reaching effect that would arise from a wage reduction. That a cut in wages is inevitable and practically is implied from the action of the labor board is generally accepted as a fact. The railroad brotherhoods in such a case are expected to again make gestures in the way of threatening to strike, but regardless of this it is contended that the issue has to be faced and settled definitely and cannot much longer be postponed.

No Enforcement Power

One great difficulty is that the labor board is without punitive power, though there is a division of opinion as to how much authority should be vested in it to support its decision. But, it is pointed out, if the board does not have authority to enforce its findings they are of little or no value, except that derived from public opinion. The latter is too often only of a sentimental or nebulous character and is not sufficiently constructive, but in the recent railroad strike situation is held to have been an influence for real good to an extraordinary degree.

It also is a widespread belief that the work of the Railroad Labor Board and the Interstate Commerce Commission should be consolidated and the latter body take over the duties of the former with greater power granted than that now resting with the board. By merging the board's work with the Interstate Commerce Commission, it is contended, the commission would at one and the same time have both labor and rate problems before it and could coordinate them more intelligently than can be done through two separate organizations. Some think that this might be done by continuing the labor board as it now is, but with more authority, if its headquarters were transferred to Washington, so that it could advise and consult with the Interstate Commerce Commission and other Government bodies in the capital. Confidence is expressed that one or the other of the two plans will be undertaken by amending the transportation act.

Sentiment at Pittsburgh

PITTSBURGH, Oct. 31.—Public announcement of the terms of agreement whereby the railroad strike scheduled for this week was called off, rather dampened expectations of lower freight rates in some quarters. This was due to newspaper stories that the settlement had been based upon assurances by the Railroad Labor Board that it would not give immediate consideration to further petitions from the railroads seeking lower wages. However, the expectation of lower freight rates still is strong, and this finds support in the fact that there has not yet been a reduction in freight rates in keeping with the reduction in wages as of July 1, and now that this wage reduction is to be accepted without a strike, it is thought that there is nothing to stand in the way of a rate reduction. The railroads also will benefit undoubtedly by a revision of working conditions and labor classifications upon which the Railroad Labor Board now is working. It is said that if the old time rules were restored the saving to the railroads would be much greater than the 10 per cent reduction in wages which railroad executives recently said in Chciago they would ask for.

The Automatic Machine Co., Cambridge, capitalized for $400,000, has been granted a Massachusetts charter. The new company will take over the business formerly carried on by the Selective Service Co., Cambridge, automatic machinery. Walter E. Hanson, Lakeview Avenue, Wakefield, is president, and Raymond V. Chipman, 24 Hollis Street, East Milton, treasurer.

JAPANESE BUYING VARIED

Inquiries for Wire, Nails and Tin Plate—Activity in Rails—Tank Inquiries from Argentina

NEW YORK, Nov. 1.—Japanese purchases continue to lead by a wide margin in the export transactions of American exporters, and while black sheets of light gage are still being purchased in about the same volume as before, a few inquiries for wire, wire nails, blue annealed sheets and other products are beginning to appear, evidently because German mills are no longer able to give early delivery on these materials. The Japanese purchasers, however, have been educated to the low quotations of Germany and the prices demanded on these products by buyers are generally too low to permit of much business. A few inquiries for galvanized sheets have appeared from Japan. One inquiry calling for 200 tons of galvanized sheets, B. W. G., held by a Philadelphia exporter with an office in New York, was recently turned down by the mills approached because of the B. W. G. specification.

Activity in Medium and Heavy Rails

The Imperial Japanese Railways are again in the market, closing Nov. 4 for about 15,000 tons of medium and light rails, 4700 tons of the total being booked for Otaru in northern Japan, where considerable development work is in progress, both by the Government and private enterprise. About 1400 tons of light rails, of which 1000 tons are 30-lb. sections and 400 tons are 60-lb. section was recently booked by a New York export house for shipment to Otaru. The recent inquiry of the Imperial Japanese Railways for 5000 tons of 75-lb. and 100-lb. rails has been awarded to Suzuki & Co., at a price said to be in the neighborhood of $40 per ton, c.i.f. Japanese port.

One large Japanese export house reports the sale of about 700 tons of structural material for a bank building in Tokio and a pipe line contract has resulted in this company's booking an order for 400 tons of steel tank plates, which will be bent in Japan. One Japanese house recently booked an order for tin plate, which included 24,000 base boxes of oil can specifications and another has received an order for 2000 base boxes. The recent report that the Japanese Government intends purchasing a total of 800,000 tons of rails in the next few years is said by long established exporters to be the periodical appearance of an accurate report of purchases intended for use in Japan, Manchuria, Korea and elsewhere in the Far East, where Japan operates railroads. For development in Korea alone, the Japanese have for several years past intended purchasing about 400,000 tons of light rails, but only when the market has reached what they consider as "rock-bottom."

South American Contracts Awarded

With German mills well filled and generally refusing to open their books for 1922, South American markets are beginning to send through a few small orders to American exporters. Aside from purchases by private interests in these markets, there are several large government contracts that have been awarded to contractors in the United States. Besides the recent Chilean electrification project, the major portion of which went to the Westinghouse International Co. and the American Locomotive Co., and the Bolivian railroad building program now being executed by the Ulen Contracting Co., New York, there is the contract for the building of a large dam in Brazil recently awarded to Dwight P. Robinson, Inc., New York, and the pending contract for the removal of a hill at Rio de Janeiro, Brazil, which is being financed by a firm of New York bankers.

For the purpose of exploiting the oil fields in the Argentine Republic, the Rivadavia Oil Co., Buenos Aires, was organized a short time ago, and about two weeks ago this company appeared in the American market with inquiries for oil tanks, pumps and other oil field material. The tank inquiries numbering six, ranging from a few thousand gallons to 1,000,000 gal. capacity, are being handled by New York companies. The largest of these specify one 1,000,000-gal. and two 600,000-gal. tanks and there is also an inquiry covering six large, high pressure line pumps. The Argentine Government, which is a part owner in this enterprise, recently purchased several oil tankers, in which the oil is transported from the fields by river route, eliminating the necessity of long pipe lines. The Standard Oil Co., which has concessions in Venezuela, began to develop these resources about six months ago and in a few months will have twelve drilling units in operation.

Keen German Competition in Far East

With the exception of agents handling aluminum and special material, German representatives in the United States, still are unable to obtain iron and steel shipments from Germany. Although German sellers of aluminum have generally maintained a price on the imported metal of about 2c. per lb. below the domestic market price, the leading aluminum interest in this country is reported to have met competition regardless of price. The leading American interest is reported to have sold one large order of ingot aluminum as low as 18c. per lb. and to have offered to meet any prices quoted by the German sellers in this country to its customers.

Despite the refusal of German mills to ship material to the United States, long time deliveries continue to other foreign markets. One New York export house recently booked with a German mill for shipment to a customer in Japan, one order for 2000 kegs of wire nails and another order for 2500 kegs and a total of about 240 tons of Nos. 26, 28 and 31 gage black sheets. Another exporter is negotiating on a large tonnage of blue annealed sheets, which it is intended to ship from Germany to the Orient. Exporters to the Dutch East Indies report that competition in that market has been growing more and more severe for some time and to-day British and American sellers have been largely eliminated by the German interests quoting low prices.

Rating on Steel Roller Chain

WASHINGTON, Nov. 1.—The Interstate Commerce Commission has ordered a rating of second class, less-than-carload, and fourth class, carload, established on or before Jan. 9, 1922, on machine finished steel roller chain in bags in official classification territory. The decision was the outcome of a complaint by the Link-Belt Co., et al., vs. P. C. C. & St. L., et al. The condemned ratings are one and one-half times first class, less-than-carload, and first class, carload, on the chain in question. In barrels or boxes the second and fourth class ratings had been in effect since Dec. 30, 1919. There has been no provision for shipment in bags since Sept. 15, 1916. The commission said that contrary to the terms of the classification shipments in bags had been accepted and that under rule 5, section 3 (c) of the classification the ratings assessed on the chain in bags were three classes higher than when shipped in barrels or boxes. The commission said that roller chain could not be damaged except through such rough treatment as would damage any of the several types of chains manufactured by the complainants as well as many other articles which are now accepted for transportation and packed in bags.

The Vanadium-Alloys Steel Co., Latrobe, Pa., has issued a handy reference card, giving a number of practical points to the tool hardener. Its size is 8½ in. x 11 in., and it is made of heavy cardboard, provided with a cord for hanging on the wall of the hardening room or the tool room. On one side are printed 37 tips and on the other side are shown the various grades of tool steel made by the company. The card is entitled "Tips for the Tool Hardener—Suggestions of a Practical Man of Long Experience."

The American Steel & Wire Co., Worcester, Mass., will spend $100,000 on its Worcester works at once to give employment to its men who would be idle otherwise. There are about 1500 idle at this plant now. This is the local share of the $10,000,000 which the United States Steel Corporation has voted to expend in the extension of its manufacturing plants.

VIEWS ON INDUSTRY

Editorial Comment Relative to Railroads, Electrical and Automotive Industries

In THE IRON AGE of Oct. 27 was given the drift of comment on business conditions in five basic industries as presented by a number of editors at the National Conference of Business Paper Editors at Chicago, Oct. 24. The industries then reviewed were iron and steel, mining, shipbuilding, construction and agriculture. Below are given extracts from other statements presented at the same meeting, these relating to the transportation, automotive and electrical industries:

Transportation

In discussing the problems of the railroads, Samuel O. Dunn, Chicago, editor *Railway Age*, referred to the developments following the increase in wages and freight rates last year, "the largest decline in traffic ever known" resulting from the depression. "For months the railroads did not earn enough to pay the interest on their bonds and seemed drifting into bankruptcy." [It is to be considered, in reading the following, that Mr. Dunn spoke several days in advance of the calling off of the strike.]

To save themselves the railroads made retrenchments beyond all precedent. These consisted largely of reductions in purchases of materials and supplies. Their purchases of iron and steel, lumber and many other commodities are normally very large. This reduction in their purchases adversely affected many other industries. The railroads applied to the Railroad Labor Board for changes in the working conditions and wages of their employees which would reduce their excessive payrolls. They laid off over 600,000 employees and the Labor Board granted them in July a reduction in wages which was equal to about one-sixth of the advances which had been made since the adoption of Government control. In the meantime traffic was increasing owing to the gradual recovery of general business. In the first ten months the present rates were in effect the railroads earned a net return of 2½ per cent, or less than one-half of what had been expected. In July they earned at the rate of 4½ per cent; in August at the rate of over 5 per cent.

This improvement inspired optimism, although it was partly nominal as well as partly real, since the increase in net return was largely due to the postponement of maintenance work that needed to be done. Meantime the railroads were being subjected to terrific pressure for reductions in rates, by agricultural and industrial interests and also by Government authorities at Washington. They realized the need for reductions in rates, but in view of the very unsatisfactory financial condition of the railroad industry itself and of the great changes that had taken place in prices and wages in other industries, believed that reductions in rates should be accompanied by further reductions in wages. Their managers, therefore, about two weeks ago, reached and publicly announced a decision to ask the Railroad Labor Board for further reductions in wages and to give to the public in reductions in rates all of the savings in operating expenses thus made.

The reduction of grain rates ordered by the Interstate Commerce Commission Oct. 22 was based by the Interstate Commerce Commission entirely upon economic conditions. The commission specifically held the operating costs of the railroads were too high to justify it, but expressed the opinion that in the near future further substantial reductions of operating costs would and should be made. That seemed to mean that the commission thought the railroads should go ahead and get their wages further reduced. One commissioner in his opinion plainly said so.

With the Interstate Commerce Commission reducing the rates, although it concedes the present operating costs are too high to justify this, the employees getting ready to strike against both past and proposed reductions of wages, and the public members of the Labor Board suggesting that the railroads shall postpone asking for any further reductions of wages, you can see there is some reason for uncertainty in one's mind as to where the railroad industry now stands and as to what its future is going to be. I think, however, that I can make certain statements and prophecies with a reasonable degree of assurance:

First, the railroads are doing better financially at present than they have been at any time during the present year.

Second, if the threatened strike comes the railroads will win it, and this will greatly improve their labor situation.

Third, in any event the railroads will go ahead and ask for further reductions in wages.

Fourth, if the railroads do not get these further reductions in wages they will strongly resist all further substantial reductions of rates, while if they do get further reductions of wages there will be voluntary reductions of rates.

Fifth, aside from any brief interruption that may be due to strikes, the traffic and earnings of the railroads will continue to increase, the purchases made by them will be increased in proportion, and this will tend to improve business of all kinds.

Let me emphasize that in the present labor struggle the railroads are fighting the battle of all the agricultural and business interests of this country and of the employees of these interests. In some industries, including the railroad industry, operating costs are still excessive and must be reduced before the industrial readjustment can be completed and general prosperity can return.

Automotive Industries

David Beecroft, directing editor the Class Journal Co., New York, in dealing with the various automotive industries, said in part:

The automotive industries are composed of eight different but closely related industries, bound together by common engineering, production, merchandising and maintenance problems, comprising the automobile, motor truck, farm tractor, airplane, motorcycle, motor boat, isolated electric lighting, and stationary gas engine.

The automobile industry this calendar year should produce approximately 1,200,000 vehicles, as compared with 1,880,000 in 1920. Ford will produce from 55 to 65 per cent of this total. During this year automobile sales have been to the urban population, the farmers not buying in any part of the country excepting in a small way since the harvesting of crops.

The motor truck industry has passed through the quietest year in its history, many factories having been closed since the fall of 1920. There has been a gradual revival in the last six or eight weeks as many large industrial corporations have in that time lifted the order which entirely prohibited purchases.

The farm tractor industry has had the slowest year in its history and many of the large factories have been closed most of the time since the drop in farm produce prices a year ago. There are heavy stocks of tractors in branch houses and warehouses. Prices have been reduced 25 to 35 per cent. The war advance averaged 75 per cent.

The airplane industry has been in a state of coma during the past year. The war left great quantities of airplane engines in stock, as well as great quantities of planes. The airplane manufacturers are continuing in business and working diligently to create an industry of commercial aviation. With this aim the Wadsworth bill, creating a department of civil aviation, and placing this in the Department of Agriculture, is up for passage.

The manufacture of isolated electric lighting outfits for farm and other service, which developed very rapidly during the war, has been in suspension for a year. A revival is looked for with the return of better crop conditions and prices. The farmer realizes that this equipment is not a luxury but rather an economic investment.

The motor-cycle industry, greatly stimulated by the war, has had a quiet year. Nearly 50 per cent was in the form of export trade which has fallen off very heavily. The industry in America has never developed as expected, due to the fact that Ford prices are so low. In other countries where automobile prices are so much higher, motor-cycle development has been greater.

Export trade in automobile accessories and parts has held up remarkably well, having been approximately 80 per cent, whereas the export of vehicles has fallen to 25 per cent. Throughout the world it is estimated 10,000,000 automobiles have been in use and the buying of parts and accessories for their operation has been kept up to a high degree.

In no other industry has the work of standardization been so persistently advanced. For 10 years this work has been under way, and it is largely responsible for the low price of the American automobile in comparison with European products. Standardization of metal specifications has made it possible for material manufacturers to get away from short runs of special lines and to stock standard grades. This has reduced prices and greatly simplified purchases. The standardization of parts so that those of one manufacturer are interchangeable with another's has made it possible to secure supplies from different factories, and production is not delayed by difficulties of any one parts

maker. One manufacturer of nuts and bolts reports that standardization saves him $500 a day on this product alone.

Electrical Industry

F. E. Watts, editor *Electrical Record*, New York, reviewed conditions in the electrical industry. He noted an increased demand upon manufacturers of power apparatus for transformers and meters. Motor sales, except possibly fractional horsepower motors, are showing a sure but slow increase. The household appliance business fell off sharply in 1920, but now is making a rapid recovery. There is also improvement in wiring supplies, including all the devices entering into construction work, but the improvement is not as great as in appliances. In lighting fixtures sales for 1920 were about $250,000,000. After a great falling off, some betterment is now seen. In general, electrical manufacturers are running 55 to 60 per cent of capacity. Export sales for the year ending June 30, 1921, aggregated $119,000,000, an increase of 37 per cent over 1920.

In the business of the central station light and power companies, the kilowatt output for every month of 1921 has been greater, with the exception of February, than the monthly average for 1919. It is estimated that to finance extensions in this field will require over $1,000,000,000 per year for a number of years. Electrical supply jobbers have been averaging about 50 per cent of their sales of 1920. The business is now much better than in the early months of this year.

Taking the electrical industry as a whole, we can look forward to the future with confidence, and there is a feeling in all branches of the industry that the development in the next few years is going to be the greatest in our history. Undoubtedly, the power of the future is not coal or oil, but electricity, and with the recognition of its many applications in industry, on the farm, and in the home, there will come such a demand that the business which has gone before will seem small in comparison.

The American Iron and Steel Institute Banquet

Checks for tickets for the banquet of the American Iron and Steel Institute, to be held at the Hotel Commodore, Friday night, Nov. 18, at which Marshal Foch will be the guest of honor, have been coming in so rapidly at the institute's offices in New York that it is evident the attendance of members will be larger than at any previous banquet. For this reason the committee has not yet decided how many guests it will be possible to entertain. Members will be duly notified as to whether they will be able to entertain guests whose names have been sent in.

Order for 200 Tank Cars

The Pennsylvania Tank Car Co., Sharon, Pa., has received an order for 200 railroad tank cars, which will be leased to shippers of liquid materials. The work will involve 8000 to 10,000 tons of iron and steel products, principally plates, and will engage capacity of the Pennsylvania company until the early part of 1922.

An appropriation for a library at its north works has been made by the American Steel & Wire Co., Worcester, Mass. Books for employees will be installed in the employment bureau under the direction of R. R. Wallace and assistants, and will be late works dealing principally with mechanical subjects, although there will be many volumes covering a variety of other subjects.

Atmospheric gas burners, particularly those used for the burning of gas for domestic purposes, have been studied by the Bureau of Standards, which has issued as Technologic Paper 193 an exhaustive analysis which is calculated to be of particular value to designers of gas burning apparatus. The pamphlet is obtainable at 15 cents a copy from the superintendent of documents, Government Printing Office, Washington.

Cambria Low Bidder on Steel for Navy

WASHINGTON, Nov. 1.—Bids equivalent to Pittsburgh base prices of 1.50c. for bars and 1.60c. for plates and shapes, submitted by the Cambria Steel Co., were the lowest received by the Bureau of Supplies and Accounts, Navy Department, at the opening to-day for steel for Navy Yard stocks. The call for bids involves approximately 525 tons of bars, 2200 tons of plates and 1400 tons of shapes. The Central Iron & Steel Co. also bid equivalent of 1.60c., base, Pittsburgh, for a portion of the plate tonnage. In all there were 11 bidders on either part or the entire tonnage. Most bids on bars were made at 1.60c. and on plates and shapes at 1.70c.

General Pershing's Tribute to James B. Bonner

General John J. Pershing recently paid a high tribute to James B. Bonner, Washington representative of the Carnegie Steel Co., on account of his valuable services as chairman of the committee on steel distribution of the American Iron and Steel Institute during the war. General Pershing sent a copy of his report on the war to Mr. Bonner with this inscription:

To Mr. James B. Bonner, whose patriotic service as a representative in Washington of the steel and iron industries of our country deserves the praise of all his countrymen.

JOHN J. PERSHING.

The *Army and Navy Register* of Oct. 22, referring to Mr. Bonner's services, says: "The difficulties of the task were enormous and too little has been known of the achievement, outside of the scenes of this important war activity. Some comprehension of the volume of business may be gained from the fact that the amount of material turned out and delivered to the various Government branches requiring it equalled about 17,000,000 tons."

Time to Stimulate Sales of Machine Tools

WASHINGTON, Nov. 1.—The present is considered a favorable time for American manufacturers of labor-saving mining machinery to stimulate the sales of their products in Great Britain, according to a report received from American Consul John R. Bradley, of Cardiff, Wales, who points out that the operators there are overlooking no opportunity to increase production and to decrease costs. Of course, the statement says, it is recognized that for some time British labor has been opposed to the employment of such machinery, despite which it appears more and more equipment is constantly being employed in the various British coal fields. The American consul will furnish the names of the principal colliery companies in his district, together with such other information as he has with regard to these companies.

Pumping Engine Awards

MILWAUKEE, Oct. 24.—The city of Milwaukee awarded a contract to-day to the Allis-Chalmers Mfg. Co. for one 25-million and two 22-million gal. pumping engines at $641,500. The only other bidder was the Worthington Pump & Machinery Corporation at $767,500.

Pittsburgh Steel Co. Earnings

The Pittsburgh Steel Co. reports net profits for the quarter ending Sept. 30 at $13,922 as compared with $1,568,367 in the same period last year. The gross business of the company for the period was $3,428,790 against $10,765,162 in the September quarter last year.

"Mose Martin used a cold rod to break the slag in his ladle," says a poster of the National Safety Council. "Hot iron splashed all over, burning him severely, but his eyes were saved. When you use a rod, heat it first. In any event—wear safety goggles." The photograph accompanying this represents a negro with bandages upon his body, the illustration having been furnished by the Standard Sanitary Mfg. Co.

SHORT TRADE ITEMS

The Wright-Alexander Co., 201 Devonshire Street, Boston, machine tools, has been made New England representative, Connecticut excepted, for the Craftsman Tool Co., Conneaut, Ohio, line of rotary milling machines.

Edward Kronman, Inc., 248 Lafayette Street, New York, manufacturer of coffee urns and other metal products, has leased the building at 211-15 West Nineteenth Street, totaling about 30,000 sq. ft., for a plant and expects to occupy the building at an early date.

The Key-Free Lock Co., New York, has been incorporated with a capital of $400,000 by A. Seibold, I. W. Gunya and J. A. Lindgren to manufacture keyless locks and locking devices. It is represented by M. A. Barney, 154 Nassau Street.

The Perfection Screen & Weather Strip Corporation, New York, has been chartered under State laws to manufacture metal screens, weather-strips, etc. The incorporators are R. Holzman, G. W. Alexander, and L. F. Rayfiel, 189 Montague Street, Brooklyn.

The Columbia Boat Co., Inc., Mount Vernon, N. Y., has been incorporated with a capital of $100,000 to manufacture motorboats, engines, etc. The principal incorporator is H. C. Werdman, 1026 Hudson Street, Hoboken, N. J.

The Zideck Adjustable Radiator Core Co., New York, has been incorporated with a capital of $45,000 by M. E. Kohn, M. Cogin and J. M. Richman, 42 Broadway, to manufacture automobile radiator equipment and other metal products.

E. J. Riggs, Bowling Green, Ky., and associates, are organizing a company to build a new refinery with initial capacity of about 300 bbl. per day, and estimated to cost approximately $100,000.

The Troy File Works, Troy, N. Y., was founded in 1831 and is still located on the same site. In 1895 it was incorporated and new buildings erected. Within the past few months, A. D. Banker, president from the time of incorporation retired entirely from the company so that he might devote himself to his private interests. In the reorganization, Joseph A. Leggett, one of the original incorporators, was elected treasurer and William K. Brown, another stock holder of long standing was elected secretary. Otto J. Swensson, a new stockholder was elected president. Mr. Swensson is a graduate civil engineer of Rensselaer Polytechnic Institute, Troy, N. Y., and has had considerable experience in engineering and manufacturing. Under the reorganization the Troy File Works is discontinuing manufacturing some of its specialties and is manufacturing new specialties. It has discontinued manufacturing rasps and its main business as it has always been is to manufacture the Trojan brand of files and the "Troy-Best" file handles.

M. K. Epstein has changed location from Philadelphia to Hartford, Conn., where he will be engaged in the same line of work as heretofore. He will act as sales agent in the New England district for Wilson-Maeulen Co., maker of pyrometers and the Rockwell hardness tester; also Tate, Jones & Co., furnace engineers.

Loy & Nawrath Co., 21 Runyon Street, Newark, N. J., manufacturers of sheet metal machinery, power brakes, squaring shears, mitre presses, etc., has opened a New York office in room 1922, 30 Church Street, telephone Cortlandt 6297.

J. T. Kelly, for several years with the Keller Pneumatic Tool Co. at Chicago, has left the company and has organized a company to specialize in machinery, power equipment and tools. This company will be known as the Kelly Machinery Co., with headquarters in Monadnock Block, Chicago.

The Richardson-Phenix Co., 118 Reservoir Avenue, Milwaukee, manufacturer of automatic lubrication devices for machinery, tools, automobiles, tractors, etc., and appliances for filtration and reclamation of lubricants, has consolidated with the S. F. Bowser Co., Fort Wayne, Ind., gasoline and oil pumps and storage systems, the combined assets exceeding $10,000,000. The personnel of both concerns is retained, save that Louis E. Strothman, vice-president and general manager of the Milwaukee company, who is seriously ill, retires. He is succeeded by S. B. Bechtal, vice-president of the Bowser company. J. William Peterson, president Richardson-Phenix Co., has been elected vice-president of the Bowser company. Executive headquarters will be located in Fort Wayne, with works and branch offices in Milwaukee.

The Boston office of the Niles-Bement-Pond Co. of Massachusetts, on or about Nov. 1, will be moved from 95 Oliver Street to 125 Purchase Street.

Manning, Maxwell & Moore, Inc., 10 High Street, rooms 811-812, Boston, on Nov. 1 will remove to 99 Chauncey Street, Textile Building, rooms 802-803.

The Truck-Grip Chain Co., Inc., 2 Columbus Circle, New York, will have its truck grip chain manufactured on contract and will sell its product through the jobbers and dealers in the trade.

The Superior Supply Co., Chicago, has been appointed direct factory representative of the Novo Engine Co., Lansing, Mich., and will handle the sale of the Novo line of portable power-driven outfits, including pumps, hoists, compressors, saw rigs, etc.

Andrew C. Perrin has been appointed representative of Herbert Morris, Inc., Buffalo, with headquarters at 550 Washington Boulevard, Chicago, where a stock of hand hoists, hand cranes, electric hoists, and trolleys is carried.

The Fort Wayne Engineering & Mfg. Co., steam engine boilers, air compressors, etc., on or about Nov. 1 will move its Boston office from 195 High Street to 75 Washington Street North.

The Seneca Falls Foundry Co. recently rented the foundry of the Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Domestic Engineering, Chicago, is now located in its commodious new home at 1900 Prairie Avenue.

The American Mutual Liability Insurance Co., Boston, is publishing a periodical called *American Mutual Magazine*. The aim of the new publication is to keep the company in closer touch with its policyholders, and to acquaint them with the company's aims and accomplishments. The first issue is dated September and consists of 24 pages, 6 x 9 in. Contributors to this issue include H. A. Earnshaw and Roger Babson.

A. W. Menkins, engineer and contractor, 321 Broadway, New York, has opened new offices in New York after having completed the construction of the terminal grain elevator at Sydney, Australia. He has been awarded by the Union of South Africa Government all the contracts for the construction of two terminal and 34 country elevators in South Africa.

The Beaubien Ice & Coal Co., 4205 West Jefferson Avenue, Detroit, will build a one-story ice plant at Baker and Porter streets, to cost $45,000.

The Detroit Edison Co., Detroit, has acquired the light and power plants now furnishing service at Williamston and Webberville, Mich., and in the future will operate in this district. Plans are under way for the construction of a new power station at Webberville, with extensions and improvements.

The American Calk Co., Detroit, has filed notice of dissolution under state laws.

B. C. Wetzel & Co., 2317 Dime Bank Building, Detroit, architects, are preparing plans for a two-story metal-working plant and foundry, 75 x 300 ft., at Ecorse, Mich.

The Waukegan Foundry Co., Waukegan, Ill., has been duly organized and incorporated for $60,000 with its main offices and foundry located at Waukegan, with a Chicago sales office at 549 West Jackson Boulevard. The officers are Andrew K. Barr, president, lately of Andover, Mass., who has made a life-long study of engineering, pattern and foundry business and is a McLain graduate on foundry practice; Elmer L. Clavey, vice-president, Highland Park, Ill.; Elmer T. Skidmore, secretary and treasurer, formerly connected with the Chicago Hardware Foundry Co. of North Chicago for 15 years as credit manager. Mr. Barr and Mr. Skidmore will have active management of the business. This foundry will specialize in light gray iron and semi-steel castings. A Whiting cupola has been installed with the latest type of International molding machines and Champion molders' benches; with air lines furnished by two units of air compressors of the National Brake & Electrical Co. and the Union steam pump type of compressors, together with the Pangborn sand blast equipment and modern, up-to-date tumbling barrels and grinders. A large, new, modern foundry building has been erected by the Manufacturers' Terminal Co. according to plans of the Waukegan Foundry Co., which has leased it for a term of years. The plant was put in operation Oct. 3.

The Crystal Fluorspar Co., Cincinnati, has been incorporated with a capitalization of $100,000. The company owns fluorspar deposits in Crittenden County, Ky., and is doing development work in preparation for an output of 50 tons daily, which is expected to be reached by Jan. 1. The head offices of the company will be located at 1522 Union Trust Building, Cincinnati. H. C. Upson, R. B. Short and Edward G. Harper are the incorporators, all located at the above address.

Iron and Steel Markets

FIRST RAILS FOR 1922

Some Increase in Equipment Orders

Further Gain in Pig Iron Output—A New Move in Wire Products

The steel trade is trying to appraise the results of a railroad strike escaped, of rail prices reduced, of pig iron output increased, and of competition sharpened with the approach of the quiet time of the year. New buying in the past week has been relatively small, though steel production is still above 40 per cent, that of the Steel Corporation being close to 50 per cent.

More than one steel company found October bookings better than for any month this year. Chiefly the lighter products, such as wire, pipe and sheets, made the showing.

First among 1922 rail contracts is one for 44,600 tons from the Southern Pacific, placed with the Tennessee company. Rail producers refer hopefully to railroad demand for next year. A survey by several Western and Northwestern roads shows contemplated purchases of 150,000 tons.

The application of the $40 rail price to 1921 rollings dates from Aug. 25 with some producers, according to an announcement of this week.

Pig iron production in October increased beyond expectations, being the largest since March and representing a gain of 43 per cent upon the low figure of July. As wired from all districts on Nov. 1, the returns make a total of 1,240,162 tons, or 40,005 tons per day, against 985,529 tons in September, or 32,850 tons per day. The increase over September is about 22 per cent.

Seventeen furnaces blew in and 3 blew out in October, a net gain of 14, and the 96 furnaces in blast Nov. 1 had an estimated capacity of 43,500 tons per day, as against 35,650 tons per day for 82 furnaces one month previous.

In spite of the weakness in prices of the heavy finished products—plates, shapes and bars—there is an effort to repeat the upward September move in wire products. The Steel Corporation's wire subsidiary is taking orders at $2.90 for wire nails, with the intimation that prices will advance as was done on Sept. 12. Some independent wire companies only lately went to $2.90 and practically all shipments in the past seven weeks have been at the $2.75 level.

Sheet and tin plate prices have indicated keener competition in the past week or two. In spite of the effort to establish a $5 advance in sheets, recent sales show concessions of $1 or more from the former basis. In tin plates $4.75 has been done of late.

Welsh tin plate mills have been displacing the American product in British Columbia, recent contracts amounting to 1,500,000 boxes. A delivered price of $4.90 is named.

The encouraging activity in fabricated steel work is sustained. About 14,000 tons of work was put under contract in the week, nearly all of it in the East, while nearly as much fresh work has appeared, most of this in the Central West. For highway work in New York 5000 tons of reinforcing bars were bought at about 1.80c. delivered.

On approximately 525 tons of bars, 2200 tons of plates and 1400 tons of shapes for the Navy Department, the Cambria Steel Co. on Nov. 1 presented the lowest bid, equivalent to 1.50c., Pittsburgh, for the bars and 1.60c. for the plates and shapes. In all, eleven bidders quoted on either part or the entire tonnage, and most bids on the bars were at a 1.60c. basis and on plates and shapes at 1.70c.

Among fresh railroad equipment inquiries are 3000 cars for the Illinois Central in addition to the 1000 mentioned last week, while the Western Pacific has bought 1000 gondola cars and the St. Paul 2500. The Chesapeake & Ohio is in the market for 1000 hopper cars and is asking for figures on repairs for 1000. Recent orders and inquiries for equipment expected to be placed by Western roads, largely in the Chicago district, will bring 70,000 to 80,000 tons of steel to the mills.

Japanese railroads are expected to buy on Nov. 4 about 15,000 tons of medium and light rails, following the recent award of 5000 tons of 75 and 100-lb. rails at a price of about $40 per ton, c.i.f. Japanese port, and 1400 tons of 30 and 60-lb. rails. Illustrating what is promising in railroad equipment exports is the recent report of Japanese needs of 800,000 tons of rails in the next few years, though this is but a recurring statement of calculated needs for Japan, Manchuria, Korea and elsewhere and made in part to sound out the possibility of low prices.

Because shipments of pig iron increased for two or three weeks, due to fear of a railroad strike, requests to defer shipments are now numerous and there is also less buying. Prices for early delivery are maintained with difficulty and a concession of at least 50c. per ton has been made from the $19 Birmingham price. Pittsburgh inquiries for 3000 to 5000 tons of basic for early 1922 have appeared.

Pittsburgh

PITTSBURGH, Nov. 1.

The reaction in demand for iron and steel continues and the past week has been the quietest the trade has seen in some time. There is a tendency in some quarters to ascribe the dullness to the universal expectation of lower freight rates, since such a change, if it failed to bring about materially lower selling prices, would result in a decrease in the delivered cost to consumers. This may be one reason for decline in buying, but the usual explanation for the demand falling off is that buyers either are filled up or are protected against their requirements over the remainder of the year at lower prices than now are quoted, and for the time being are not vitally interested in the market. It is evident that mill order books are not particularly well filled because the past week has developed fresh weakness in prices, notably in sheets, in which concessions of at least $1 a ton have been made from the prices announced early in September and there is so much anxiety on the part of some producers for business that buyers believe they would not have to go above the August prices to secure tonnages.

The market on tin plate has slipped off $5 per ton to $4.75 per base box, and there is an impression that since this price has been done, the American

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Advances over the previous week in heavy type, declines in italics.
At date, one week, one month, and one year previous.
For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 1, 1921	Oct. 25, 1921	Oct. 4, 1921	Nov. 1, 1920
No. 2X, Philadelphia‡	$22.84	$22.84	$21.84	$48.79
No. 2, Valley furnace†	21.00	21.00	21.00	42.00
No. 2, Southern, Cin'ti†	23.50	23.50	23.50	42.50
No. 2, Birmingham, Ala.†	19.00	19.00	19.00	38.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	40.00
Basic, del'd, eastern Pa	20.50	20.50	20.50	44.46
Basic, Valley furnace	19.00	19.00	19.25	38.50
Bessemer, Pittsburgh	21.96	21.96	21.96	43.96
Malleable, Chicago*	21.00	21.00	21.00	40.50
Malleable, Valley	20.50	20.50	20.50	42.00
Gray forge, Pittsburgh	21.96	21.96	21.96	43.96
L. S. charcoal, Chicago	31.50	31.50	31.50	58.50
Ferromanganese, del'd	60.00	60.00	60.00	155.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$40.00	$40.00	$47.00	$57.00
Bess. billets, Pittsburgh	29.00	29.00	29.00	55.00
O.-h. billets, Pittsburgh	29.00	29.00	29.00	55.00
O.-h. sheet bars, P'gh	30.00	30.00	32.00	62.50
Forging billets, base, P'gh.	35.00	35.00	35.00	65.00
O.-h. billets, Phila	34.74	34.74	35.74	60.74
Wire rods, Pittsburgh	40.00	40.00	41.00	70.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb	1.60	1.60	1.60	3.25
Light rails at mill	*1.65*	1.70	1.70	3.00
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	1.95	1.95	1.95	4.85
Iron bars, Chicago	1.75	1.75	1.75	3.75
Steel bars, Pittsburgh	1.50	1.50	1.60	3.00
Steel bars, Chicago	1.75	1.75	1.75	3.38
Steel bars, New York	1.80	1.80	1.98	3.38
Tank plates, Pittsburgh	1.60	1.60	1.60	2.85
Tank plates, Chicago	1.75	1.75	1.65	3.23
Tank plates, New York	1.88	1.88	1.98	3.38
Beams, Pittsburgh	1.60	1.60	1.60	3.00
Beams, Chicago	1.75	1.75	1.75	3.38
Beams, New York	1.88	1.88	1.98	3.38
Steel hoops, Pittsburgh	2.25	2.25	2.25	5.00

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Nov. 1, 1921 Cents	Oct. 25, 1921 Cents	Oct. 4, 1921 Cents	Nov. 1, 1920 Cents
Sheets, black, No. 28, P'gh.	*2.90*	3.00	3.00	6.50
Sheets, galv., No. 28, P'gh.	*3.90*	4.00	4.00	7.75
Sheets, blue an'l'd, 9 & 10.	2.25	2.25	2.25	4.90
Wire nails, Pittsburgh	2.90	2.90	2.90	4.25
Plain wire, Pittsburgh	2.60	2.60	2.60	3.75
Barbed wire, galv., P'gh	3.55	3.55	3.55	4.45
Tin plate, 100-lb. box, P'gh	*$4.75*	$5.00	$5.25	$8.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$16.50	$16.50	$16.00	$33.00
Carwheels, Philadelphia	**17.50**	17.00	17.00	39.00
Heavy steel scrap, P'gh	14.50	14.50	14.00	26.00
Heavy steel scrap, Phila.	12.00	12.00	11.75	21.00
Heavy steel scrap, Ch'go.	12.00	12.00	12.25	19.50
No. 1 cast, Pittsburgh	17.50	17.50	17.50	38.00
No. 1 cast, Philadelphia	17.50	17.50	17.00	37.00
No. 1 cast, Ch'go (net ton)	*13.75*	14.00	13.50	26.00
No. 1 RR. wrot, Phila.	16.00	16.00	15.50	27.00
No. 1 RR. wrot, Ch'go (net)	*12.50*	13.00	12.50	19.00
Coke, Connellsville,				
Per Net Ton at Oven:				
Furnace coke, prompt	*$3.10*	$3.25	$3.25	$9.00
Foundry coke, prompt	4.25	4.25	4.25	11.00
Non-Ferrous Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	**13.12½**	13.00	12.62½	15.00
Electrolytic copper, N. Y.	12.75	12.75	12.37½	15.00
Zinc, St. Louis	*4.55*	4.60	4.55	6.90
Zinc, New York	*5.05*	5.10	5.05	7.35
Lead, St. Louis	4.40	4.40	4.50	6.65
Lead, New York	4.70	4.70	4.70	6.90
Tin, New York	*28.00*	28.50	26.75	39.50
Antimony (Asiatic), N. Y.	*4.75*	4.85	5.00	6.37½

*The average switching charge for delivery to foundries in the Chicago district is 70c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.
The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price, Nov. 1, 1921, Finished Steel, 2.163c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets — These products constitute 88 per cent of the United States output of finished steel.

Oct. 25, 1921,	2.177c.
Oct. 4, 1921,	2.236c.
Nov. 2, 1920,	3.724c.
10-year pre-war average,	1.684c.

Composite Price, Nov. 1, 1921, Pig Iron, $19.97 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

Oct. 25, 1921,	$19.97
Oct. 4, 1921,	19.93
Nov. 2, 1920,	40.38
10-year pre-war average,	15.72

Sheet & Tin Plate Co., which soon will open its books for first quarter and first half of 1922 business, will not name a higher price than that.

The American Steel & Wire Co. apparently is getting ready to announce another advance in prices, as it is actively urging purchase at the Sept. 12 quotations, and intimating the probability of higher prices. It is reported here that this company intends to go to a base of $3.05 for nails. There seems to be no activity among the independents in this direction at present, and it was only yesterday that the Youngstown Sheet & Tube Co. moved its prices up to $2.90 for nails and $2.60 for plain wire. As a matter of fact, the Sept. 12 prices on wire products have found little, if any, basis in sales because most companies allowed their customers to contract liberally at the old figure and those companies which did not follow this course found it necessary to accept the old quotations to compete with contract business. The recent advance in hoops, bands and strips drove in a good many orders at the former prices, but as specifications are not coming along freely, the orders must be regarded to be little more than protection.

Activity in the heavier products still is limited and quotations of more than 1.60c. refer to only small tonnages. The impression is strong that if sizable orders were tendered, the price would not be more than 1.50c, base, on bars, plates and shapes.

The pig iron market is practically dead and again is swinging, as far as prices are concerned, in favor of buyers. The scrap market is less active and dealers are having trouble in maintaining the recent advances. The fuel market is decidedly soft. Some purchases of coke made in anticipation of a possible railroad strike are being canceled, while the coal market suffers from the same cause and feels the effects of a widely circulated report that freight rates on coal were to be reduced immediately, as well as the fact that the railroads are refusing longer to allow cars to be used for storage purposes.

Pig Iron.—The Allegheny Steel Co. has put out an inquiry for from 3000 to 5000 tons of basic iron for delivery over the first quarter or first half of 1922, and the Follansbee Brothers Co. is seeking 3000 tons of the same grade, 1000 for immediate shipment and the remainder for delivery over the rest of the year. The West Penn Steel Co. also is in the market for a moderate sized tonnage of basic. Outside of these inquiries, the market has been utterly devoid of interest. Producers of foundry iron have not succeeded in moving more than a few carloads and while such business has been on a basis of $21, furnace, for No. 2 grade, the market does not show as strong a tone as recently and it is believed that concessions would be developed by the appearance of sizable inquiries. The market is not over and above strong on basic iron either, as the avail-

able supply still exceeds the demand and holdings of middlemen are cropping out to bother the producers. W. P. Snyder & Co. in their monthly report for October on average prices of sales of basic and Bessemer iron show that the former averaged $19 and the latter $20. This is a decline of 25c. per ton from the September average on basic, while the October average on Bessemer is unchanged from that of the previous month. The business meeting of the American Pig Iron Association held at the Pittsburgh Country Club, Oct. 26, was given over largely to a discussion of taxes.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.96 per gross ton:

Basic	$19.00
Bessemer	20.00
Gray forge	20.00
No. 2 foundry	21.00
No. 3 foundry	20.50
Malleable	20.50

Ferroalloys.—Business remains extremely slack. Prices do not change much, but the drift still is down. On ferromanganese, the market is quotable at $60 delivered, but with no important sales noted. Domestic producers are quoting down to $58.35, seaboard, the nominal quotation of English makers, but consumers express the belief of being able to get the material landed here at that price. In the absence of business, it is difficult to obtain really definite prices. Outside of a sale of 200 tons of 20 per cent spiegeleisen to a Youngstown district steel maker at $30, delivered, there has been no important trading in that material. This price would mean slightly less here, owing to the difference in freight charges. Interest in 50 per cent ferrosilicon again has waned, probably because most consumers recently covered their needs over the remainder of the year. A northern New York maker recently offered a round tonnage of this alloy at $53, furnace, equivalent to slightly more than $56 delivered in this and nearby districts; it was promptly sold and the supposition is that it was taken by another producer for the purpose of holding up the market. No recent sales have been done at more than $57, delivered, and the price idea of most consumers now is $55.

We quote 78 to 82 per cent domestic ferromanganese at $60 delivered; 78 to 82 per cent foreign ferromanganese, $53.28 to $55, c.i.f. Atlantic seaboard. We quote average 20 per cent spiegeleisen at $30 delivered, Pittsburgh or Valleys; 50 per cent ferrosilicon, domestic, $57, freight allowed. Bessemer ferrosilicon is quoted f.o.b. Jackson and New Straitsville, Ohio, furnaces as follows: 10 per cent, $38.50; 11 per cent, $41.80; 12 per cent, $45.10; 13 per cent, $49.10; 14 per cent, $54.10; silvery iron, 6 per cent, $27; 7 per cent, $28; 8 per cent, $29.50; 9 per cent, $31.50; 10 per cent, $33.50; 11 per cent, $36; 12 per cent, $38.50. The present freight rate from Jackson and New Straitsville, Ohio, into the Pittsburgh district is $4.06 per gross ton.

Billets, Sheet Bars and Slabs.—A maker of tubular goods is reported to be seeking a round tonnage of slabs for first quarter delivery, while a couple of bolt and spike makers have put out an inquiry for round lots of billets for the same period. The total tonnage involved is 11,000. Generally, there is very little interest in semi-finished steel and prices for the most part are nominal. Small sales of sheet bars are reported to sheet makers without regular sources of supply at $32, mill, but there is reason to suppose that this price would be shaded $1 to $2 per ton on attractive orders. Most consumers were allowed to cover their probable requirements early in September prior to the advance at that time and are now out of the market. Billets generally are held at $30 for soft steel and $35 for forging quality, but attractive orders carrying $1 a ton less would not be rejected. The market is equally uncertain on slabs.

We quote 4 x 4 in. soft Bessemer and open-hearth billets at $29 to $30; 2 x 2-in. billets, $30 to $32; Bessemer and open-hearth sheet bars, $30 to $32; slabs, $30 to $31; forging billets, ordinary carbons, $35, all f.o.b. Youngstown or Pittsburgh mills.

Wire Rods.—The attempt to secure $41, Pittsburgh, for common soft rods is quite as futile now as it was when this price first was established. Consumers generally were allowed to cover their requirements at the old prices ranging from $38 to $40 and still are out of the market. Since the Sept. 12 prices on wire products never were established by substantial business and there has been little or no improvement in the bolt and rivet business, these interests naturally are not falling over one another to secure rods. The market is dull and $40, Pittsburgh, represents to-day's maximum price possibility. Rods for export have been sold recently as low as $38. Prices are given on page 1182.

Wire Products.—Interest of the trade centers upon the recently inaugurated drive for business by the American Steel & Wire Co. at the Sept. 12 prices, based upon the probability of another advance. Independent companies are slow to follow in this direction, for while specifications are coming along fairly well against orders and contracts for nails entered prior to Sept. 12, there is not much activity in other wire products and there is also the fear that an advance at this time could not be maintained. Nails have been available right along at $2.75, base, per keg, and plain wire at $2.50, as one independent did not adopt the September advance until yesterday and other companies that failed to make contracts found it impossible to exact the higher prices when so many were covered at the old figure.

We quote wire nails at $2.90 base per keg, Pittsburgh, and bright basic and Bessemer wire at $2.60 base per 100 lb., Pittsburgh.

Structural Material.—Although the Fort Pitt Bridge Co. was the low bidder for the filtering plant for the City of Detroit, it has not yet been awarded the contract, which calls for 2400 tons of steel, as Detroit trade organizations are agitating to keep the business at home. The McClintic-Marshall Co. has taken several buildings for the Cerro de Pasco Copper Corporation, Peru, amounting to 300 tons; a plate girder bridge for the Philadelphia & Reading Railroad at Douglasville, Pa., taking 170 tons; an apartment house at Ninety-fifth Street and Fifth Avenue, New York, calling for 700 tons, and a mill building for the Delaware Seamless Tube Co., Auburn, Pa., for which 125 tons will be required. Not much activity is noted in plain material and the market is not very well defined. Quotations generally range from 1.60c. to 1.75c., but there still is talk of 1.50c. and this probably could be done on an order of some size. Prices are given on page 1182.

Plates.—Considerable variation still is observed in prices, makers quoting anywhere from 1.60c. to 1.75c., while buyers say they do not have to go above 1.60c. even on small tonnages, and believe they will be able to negotiate large tonnages at around 1.50c. Orders generally are small, although there are a number of promising tank inquiries, especially from the recently opened Mexica oil fields in Texas. Prices are given on page 1182.

We quote sheared plates, ¼ in. and heavier, tank quality, at 1.50c. to 1.65c. f.o.b. Pittsburgh.

Steel Rails.—The Carnegie Steel Co. has made no change in its price of light rails, still holding to the old base of 1.75c., Pittsburgh, for 25 to 45-lb. sections. Independent makers, however, are publicly quoting 1.65c., and make no claims that this price finds much support in sales. Demand is lighter than it was recently, as so many of the coal companies have covered against their winter requirements. Standard rails are quoted at $40, mill, for either Bessemer or open-hearth steel. It transpires that the Steel Corporation some time ago abandoned the differential of $2 per ton between the two kinds of rails and its recent reduction in the price was $7 per ton. Since there was no public announcement of this step at the time, independent makers continued to quote $45 for Bessemer and $47 for open hearth rails. All companies now are quoting both grades at $40.

We quote 25 to 45-lb. sections, rolled from new steel, 1.65c. to 1.75c. base; rolled from old rails, 1.60c. base; standard rails, $40 per gross ton mill for Bessemer and open-hearth sections.

Iron and Steel Bars.—Business in merchant steel bars still is unsatisfactory in that buyers are confining purchases closely to actual needs. On such business the effort of makers is to maintain a price of 1.65c., base, but the effort was not entirely successful. If there were any sizable orders, it is doubtful whether buyers would have to go above 1.50c. The Baldwin Reservoir at Cleveland again is up for bids and this creates some interest in reinforcing bars, as the project calls for 1750 tons of these bars. A recent drop in the puddling rate to $8.43 per ton as yet has had no effect

upon local prices of iron bars, which still are quoted at 2.15c. to 2.25c. in carloads.

We quote steel bars rolled from billets at 1.50c. to 1.65c.; reinforcing bars, rolled from billets, 1.50c. to 1.65c. base; reinforcing bars, rolled from old rails, 1.50c.; refined iron bars, 2.15c. to 2.25c. in carloads, f.o.b. mill, Pittsburgh.

Iron and Steel Pipe.—Improvement in the demand for merchant pipe continues, and while manufacturers' stocks have not been entirely liquidated, they are so low that on some sizes the best delivery that can be promised now on new business is two to three weeks. This is a decided change from the conditions of six to eight weeks ago, when shipments were being made as soon as the orders were received. New building throughout the country, apparently has been on a heavier scale than generally supposed; there is no other plausible explanation for the improvement in merchant pipe. Active inquiry still is noted for line pipe, especially from the recently opened Mexia field, situated about 75 miles southwest of Dallas, Texas. Some inquiry is developing for oil-well pipe, but no important business has been placed. Prices still are irregular and while possibly the concessions from card prices are smaller than they were recently, the market still is more favorable to buyers than sellers. Discounts are given on page 1182.

Sheets.—Buyers are specifying fairly well against orders entered some weeks ago, but confident buying, so pleasing to the manufacturers, still is lacking. Mill operations are on a smaller scale than recently, and evidence that there is not enough business to go around is found in concessions from the regular quotations of 3c., base for black, and 4c., base for galvanized. The extent of the concessions is a little uncertain, but it is known that at least $1 per ton less than the regular figures has been accepted and buyers say that some mills would take business at the August base of 2.75c. for black and 3.75c. for galvanized. Independent sheet makers in the Mahoning and Shenango valleys this week have about 65 per cent of their mills in operation and the general independent average is not much higher, due to the fact that two Kentucky plants are down as a result of labor troubles. The American Sheet & Tin Plate Co. has about 85 per cent of its mills running this week. Prices are given on page 1182.

Tin Plate.—Some large export inquiries are coming out, notably from British Columbia, but practically all of the business is going to Welsh makers who have quoted as low as $4.90 per base box delivered, which is well below the price of American producers. Welsh makers recently booked 150,000 boxes of odd sizes in British Columbia. Domestic demand is on a tapering scale and the effort to stimulate interest is resulting in but scant attention being paid to prices. There is no longer much basis in sales for a quotation of $5.25 for production plate, and $5 really is maximum, as some makers recently have gone as low as $4.75 to get business. The American Sheet & Tin Plate Co. is expected to open its books for first quarter and first half of 1922 tonnages before long, and there is an impression that its price will be less than $5 per base box. There is very little change in mill operations, but the tendency is up rather than down, because two large independent units this week are running 100 per cent on standard sizes for stock. One of these companies offered its men the choice of working half time at the old scale of wages or working full time at a reduction of 20 per cent. The latter offer was accepted. Quotations on terne plate are not being strictly observed.

We quote standard production coke tin plate at $4.75 to $5 per base box f.o.b. Pittsburgh, for carload lots.

Cold-Finished Steel Bars and Shafting.—Not much improvement is noted in the demand and prices still are irregular and easy. Makers continue to quote 2.15c. to 2.25c. base, according to the tonnage inquired for, but actual sales have been made at less, a price of 2c. base being mentioned. This figure probably was done on the automobile sizes of screw stock and presumably in competition with resale offerings by the automobile makers having surplus stock. Ground shafting is unchanged at 2.75 base mill.

Hoops and Bands.—Not much activity is noted even upon the part of buyers who were allowed to enter their requirements prior to the recent $5 per ton advance. All makers are quoting 2.25c. base, Pittsburgh, but this is more an asking than a selling price.

Nuts, Bolts and Rivets.—Interest in the market is slightly greater and there has been a moderate gain in orders, but prices still are rather unsatisfactory and there still is considerable difference between what is asked and what is being obtained. Prices and discounts are given on page 1182.

Spikes.—The Big Four Railroad recently closed for the 5000 kegs of standard spikes, the business going to a Pittsburgh district maker at about 2.25c. base. No other important sales recently have been made and inquiries generally are for small lots to meet the pressing requirements of the railroads. Fair demand is coming out for small spikes. Prices still are soft with $2.30 the general maximum on standard spikes and $2.50 the top on small spikes. Prices are given on page 1182.

Hot-Rolled and Cold-Rolled Strips.—Makers of cold-rolled strips have generally advanced the price $5 per ton, to a base of 4c., Pittsburgh. This is in keeping with the recent advance of a like amount in hot-rolled strips to 2.25c. base, Pittsburgh. Some orders have been received as a result of these increases, but they are in almost all cases priced at the old levels and while the bookings of makers to-day are at the highest point in some time, the situation is not entirely satisfactory because specifications are not coming in with real freedom.

Coke and Coal.—The market on both coke and coal has come almost to a standstill as a result of the settlement of the railroad strike. That event also has contributed to a material weakening in prices, as it has resulted in the cancellation of a number of orders placed in anticipation of a strike, this being notably true in foundry coke. Expectation of an early reduction in coal freight rates has made buyers cautious and prices also have been weakened by the fact that the Pennsylvania Railroad, having experienced a shortage of cars, has stopped the use of its cars for storage purposes and this has resulted in a good many loaded cars being thrown upon the market. Spot furnace coke now is hardly quotable even for the best grades, at higher than $3.25 per net ton, oven, and some recent business has been done as low as $3.10. Contract business is almost nil, and while producers are quoting $3.40 against such business as has been up, no sales have been consummated, at least in Connellsville coke. A Valley furnace interest recently closed for 20,000 tons for shipment in equal quantities this month and the next, the business going to a Youngstown steel company at around $5, Youngstown. The other inquiry for 30,000 tons has been withdrawn. A number of Connellsville producers have ovens which they are anxious to keep in, and it is believed would take business for shipment over the remainder of the year at $3.25. Foundry coke still is quoted at $4.25 to $4.75 per net ton, oven, but there have been some resale transactions as low as $4. There is no change in the quotations on coal, but sharp concessions have been made on "distress" tonnages and it would be necessary to shade prices to get business in freshly mined coal.

Steel Skelp.—Demand still is limited despite an improved market in pipe. Evidently the nonintegrated pipe makers have ample supplies. The market is quoted at 1.60c. to 1.65c. on steel pipe skelp, but these prices are nominal in the absence of important sales and are known to have been shaded on small export sales.

Old Material.—Demand from the steel companies has tapered off considerably since last reports and while prices show no appreciable easing, dealers are having much trouble in effecting sales. Youngstown district steel companies are less eager for tonnages and this means larger offerings to the melters in this district. Heavy melting steel still is quotable at from $14.50 to $15.00, but it is impossible for consumers to pick up other than small tonnages at these prices. The prices in primary points still are headed upward, as is evident from the fact that machine shop turnings recently sold by Dodge Bros. brought $6.05, Detroit, equivalent to $10.95, Pittsburgh, while compressed sheets offered by

(*Continued on page* 1181)

Chicago

CHICAGO, Nov. 1.

The settlement of the railroad crisis was an unsatisfactory one in the opinion of the steel trade, inasmuch as it did not clear up any of the uncertainties which stand in the way of business revival. Further reductions in wages are postponed indefinitely and the carriers intimate that a cut in freight rates is likewise deferred. There is no assurance that the brotherhoods will not again threaten a strike when the subject of wage reductions finally comes before the Railroad Labor Board.

Notwithstanding these considerations, sellers of iron and steel still look forward hopefully to a period of liberal buying by the railroads. From no other source, it is felt, can sufficient tonnage come to bring blast furnace and mill operations back to normal conditions. The building industry is still hampered by high labor costs, the agricultural implement manufacturers are not expected to get back on their feet for months, shipbuilding activity is at a low ebb, and automobile production is falling off. Considerable interest is manifested in the possible rail purchases of the carriers in 1922, particularly because a new Western rail mill will be figuring in the market at that time. A recent survey of a number of Western and Northwestern lines indicates that purchases aggregating 150,000 tons are definitely contemplated, as against orders placed by them in 1921 for nearly twice that tonnage. It is possible that their buying programs will be subsequently expanded, although in this connection it is to be remembered that considerable 1921 tonnage is still unspecified. The announcement of a $7 reduction in price, however, is expected to release the tonnage still on mill books. Thus far the most important local release to appear since the reduction is 20,000 tons for a Chicago line. Probably the first order for next year delivery to follow the announcement calls for 44,600 tons, and was placed by the Southern Pacific with the Tennessee Coal, Iron & Railroad Co. An export inquiry for 7000 tons of 60-lb. rails has been received from the Far East.

A favorable development in railroad buying policy is the fact that inquiries for new cars are assuming greater prominence than car repair work on which the carriers have been concentrating for several months. Recent orders and inquiries for new equipment likely to be built in the West will put from 70,000 to 80,000 tons of steel on mill books.

The price situation shows little change. Here and there are signs of reaction upward. Sharp competition brought steel car axles down to the abnormally low figure of 2c., base Pittsburgh, with the result that makers generally are showing a disposition to withdraw from the market rather than to take further orders at that level. Practically the only finished steel commodity which shows decided firmness is wire products, and another advance would not prove a surprise to some observers.

Mill and furnace operations in this district have improved slightly. The Illinois Steel Co. has increased its ingot output to 45 per cent of capacity, while the Inland Steel Co. remains on a 35 per cent basis. The leading producer of merchant iron expects to blow in one of its Iroquois furnaces within a week.

Pig Iron.—The leading merchant reports that orders and specifications are slowly but steadily reducing its stocks on furnace yards and that one of the idle Iroquois furnaces will probably be blown in within a week. The market has been without spectacular features during the past week, but the feeling that business conditions are on the upgrade is gaining ground. Prices are again definitely on a $21 furnace basis, notwithstanding the fact that a steel works stack continues to quote $22. Recent sales include 500 tons of malleable, two lots of 150 tons of malleable, and 200 tons of low phosphorous for Eastern delivery. A Michigan melter is in the market for 300 to 500 tons of malleable for shipment over the remainder of the year. Another current inquiry calls for 500 tons of malleable. An Alabama furnace is quoting $32, Birmingham, on one to two per cent silicon low phosphorous. This is equivalent to $38.67, Chicago, or slightly under the delivered price of Eastern material. Tennessee stocks of silvery have been so reduced that they no longer figure in the market and ruling prices are those of Jackson county producers.

Quotations on Northern foundry, high phosphorus malleable and basic irons are f.o.b. local furnace and do not include a switching charge averaging 70c. per ton. Other prices are for iron delivered at consumers' yards, or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$31.50 to $33.50
Northern coke, No. 1, sil. 2.25 to 2.75	21.50
Northern coke, foundry, No. 2, sil. 1.75 to 2.25	21.00
Northern high phos.	21.00
Southern foundry, sil. 1.75 to 2.25	25.67
Malleable, not over 2.25 sil.	21.00
Basic	21.00
Low phos., Birmingham	32.00
Low phos., Eastern furnace, sil. 1 to 2 per cent copper free	34.00
Silvery, sil. 8 per cent	34.82

Ferroalloys.—A quotation of $58.35, seaboard, has now become firmly established as the minimum market quotation on ferromanganese. There is little activity in any of the ferroalloys.

We quote 78 to 82 per cent ferromanganese, $66.75, delivered; 50 per cent ferrosilicon, $60, delivered; spiegeleisen, 18 to 22 per cent, $36 to $37, delivered.

Railroad Equipment.—The Illinois Central is in the market for 2000 gondola cars, 1000 refrigerator cars, 500 convertible cars, and 500 flat cars. The Western Pacific Corporation has let 1000 70-ton steel gondola cars to the Western Steel Car & Foundry Co. The Chicago, Milwaukee & St. Paul has placed orders for 1500 50-ton gondola cars with the Haskell & Barker Car Co., and 1000 of the same type with the Bettendorf Co. The Chesapeake & Ohio is inquiring for 500 70-ton hopper cars and a like number of 50-ton hopper cars, and is also asking for figures on the repair of 1000 hopper cars. The Missouri, Kansas & Texas is asking for prices on 20 passenger and 10 baggage cars.

Cast Iron Pipe.—The bids on 17,000 tons of 6 to 48-in. for Detroit, as received yesterday, are as follows: Lynchburg Foundry Co., $42.80, delivered; United States Cast Iron Pipe & Foundry Co., $43.20; American Cast Iron Pipe Co., $43.80. The freight to Detroit is $8.80, so that the low bid is equivalent to $34, Birmingham. Columbus, Ohio, has let 1635 tons to the United States Cast Iron Pipe & Foundry Co. Ashland, Ky., has awarded 200 tons to the American Cast Iron Pipe Co., and James B. Clow & Son will furnish 375 tons for Marietta, Ohio. Portsmouth, Ohio, takes bids on 300 tons, Nov. 7.

We quote per net ton, f.o.b. Chicago, ex-war tax, as follows: Water pipe, 4-in., $45.60 to $47.10; 6-in. and above, $42.60 to $44.10; class A and gas pipe, $3 extra.

Rails and Track Supplies.—Although the reduction in rails is expected to release considerable steel on mill books, thus far the only important tonnage on which rolling instructions have been given is 20,000 tons for a Chicago line. No 1922 business has yet been reported, but it is known that the new rail price coincides rather closely with what a number of Western lines regard as a fair figure. As was expected, the announcement on rails has been followed by a reduction in angle bars, the new quotation of the Steel Corporation subsidiaries being 2.40c. f.o.b. mill. Inquiries for spikes and bolts are more numerous and range from 500 to 5000 kegs each. Prices are soft and the ruling market appears to be 2.30c., Pittsburgh, on standard railroad spikes and 3.30c., Pittsburgh, on track bolts.

Standard Bessemer and open-hearth rails, $40; light rails rolled from new steel, 1.70c. to 1.75c. f.o.b. makers' mills.

Standard railroad spikes, 2.30c., Pittsburgh; track bolts with square nuts, 3.30c., Pittsburgh; tie plates, steel and iron, 2c., f.o.b. mill; angle bars, 2.40c., f.o.b. mill.

Plates.—Railroad car construction and repair work constitute the chief sources of tonnage, although some business continues to come from miscellaneous buyers, such as tank builders, boiler manufacturers and jobbers. The railroads are doing an increasing amount of car repair work in their own shops for which they are buying steel from time to time, ordinarily in moderate tonnages. Some large inquiries for cars are in the

market and considerable car repair work is still pending. The Sinclair Refining Co. has issued an inquiry for 16 oil storage tanks, requiring 2700 tons, for the Oklahoma fields, as noted in our New York market last week. Although the inquiry was made from the New York office of the Sinclair company, it will be figured on by Chicago district fabricators. In the aggregate, current plate bookings are still sub-normal and mill quotations are not so firm as in recent weeks.

The ruling mill quotations range from 1.75c. to 1.85c. Chicago. Jobbers quote 2.88c. for plates out of stock.

Bars.—The market is quiet and no material change in the price situation is to be noted. The Rochester Bridge Co., through a subsidiary, has taken 150 tons of reinforcing for State highways near Bement, Ill. General contracts for a number of other important reinforcing jobs are at the point of closing, but the subletting of the steel to reinforcing bar companies has not yet been effected. The Koss Construction Co., Des Moines, Iowa, has the contract for a bridge at Grand Rapids, Mich., requiring 250 tons. The Owen-Ames-Kimball Co., Grand Rapids, is low bidder on a filtration plant in that city requiring 370 tons. The Ellington Miller Co., Chicago, named the low figure on a waterworks plant, Ashland, Ky., involving 100 tons. The demand for bar iron remains at a low ebb and intermittent mill operations are still the rule. The hard steel bar situation shows no change for the better. One representative rail carbon steel bar mill operated single turn during three-quarters of October and is idle as November opens. The ruling market appears to be 1.75c., Chicago, but in a few cases as low as 1.65c. has been named.

Mill prices are: Mild steel bars, 1.75c. to 1.85c., Chicago; common bar iron, 1.75c., Chicago; rail carbon, 1.75c., mill or Chicago.

Jobbers quote 2.78c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 3.85c. for rounds and 4.35c. for flats, squares and hexagons. Jobbers quote hard and medium deformed steel bars at 2.10c. base.

Sheets.—The attempted advance of certain independents has proved a decided failure in this district. The quotations named below represent the ruling market. A fair amount of business continues to be placed at those prices, proportionately more tonnage than is being booked by plate, structural and bar mills. The hot mills of the local independent are still running full.

Mill quotations are 3c. for No. 28 black, 2.25c. to 2.50c. for No. 10 blue annealed and 4c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight to Chicago of 38c. per 100 lb.

Jobbers quote: Chicago delivery out of stocks, No. 10 blue annealed, 3.38c.; No. 28 black, 4.15c.; No. 28 galvanized, 5.15c. Hoops and bands, 3.48c.

Bolts and Nuts.—Makers note a slightly better demand from miscellaneous sources, as, for instance, from manufacturers of building hardware. Discounts are soft, but there appears to be a trend towards greater firmness. For nominal prices and discounts, see finished iron and steel, f.o.b. Pittsburgh, page 1182.

Jobbers quote structural rivets, 3.68c.; boiler rivets, 3.78c.; machine bolts up to ⅞ x 4 in., 60 per cent off; larger sizes, 55 off; carriage bolts up to ⅞ x 6 in., 55 off; larger sizes, 50 and 5 off; hot pressed nuts, square and hexagon tapped, $3 off; blank nuts, $3.25 off; coach or lag screws, gimlet points, square heads, 60 per cent off. Quantity extras are unchanged.

Warehouse Business.—Local warehouses report business on a slightly improved plane. Significance is attached to the fact that although orders generally taper off at the close of the month, the last week of October showed a sustained demand for material. Track bolts have been reduced to 4.40c. and track spikes to 3.40c. Low carbon open hearth forging billets have been reduced from 2.59c. to 2.48c. and 0.35 to 0.45 carbon billets from 2.63½c. to 2.52c.

Wire Products.—Bookings are of favorable proportions and of the same character as previously noted, except that orders from the railroads are more numerous. For mill prices, see finished iron and steel, f.o.b. Pittsburgh, page 1182.

We quote warehouse prices f.o.b. Chicago: No. 9 and heavier black annealed wire, $3.48 per 100 lb.; No. 9 and heavier bright basic wire, $3.63 per 100 lb.; common wire nails, $3.63 per 100 lb.; cement coated nails, $3.05 per keg.

Structural Material.—The threatened railroad strike tended to halt business last week, but it now seems probable that business will be resumed at the rate which prevailed throughout October. Quotations on plain material are less steady, although it is urged that in view of their present low level there can be no material change in a downward direction. Competition between fabricators is still very keen, and this fact is appreciated by those in a position to go ahead with construction projects. Structural lettings include:

Mead Morrison Mfg. Co., ore bridge for Union Carbide Co., Niagara Falls, N. Y., 250 tons, to Lackawanna Bridge Co.

State of Washington, lift bridge, Kelso, Wash., 632 tons, to American Bridge Co.

Abou Ben Adhem Shrine Temple, Springfield, Mo., 327 tons, to Decatur Bridge Co.

Memorial Community Building, Wakefield, Mich., 147 tons, to Worden-Allen Co.

Chicago, Burlington & Quincy Railroad, girder and I-beam spans, Wichita Falls, Tex., and Denver, Colo., 126 tons, to American Bridge Co.

Theater and business block for Teutonia Avenue Investment Co., Milwaukee, 125 tons, to Worden-Allen Co.

Pauly & Marx, Inc., public garage, sales and service building, Milwaukee, 100 tons, to Milwaukee Bridge Co.

Wisconsin Masonic Home, Dousman, 115 tons, to Milwaukee Structural Steel Co.

Illinois Highway Commission, bridge, Bement, Ill., 350 tons, to Rochester Bridge Co.

Pending business includes:

London Guarantee & Accident Co. building, Chicago, 3000 tons, Alfred S. Alschuler, architect.

State Division of Waterways, aqueduct, Ottawa, Ill., 200 tons.

Oklahoma State Highway Commission, four large bridges, bids to be taken Nov. 15.

The mill quotation on plain material ranges from 1.75c. to 1.85c., Chicago. Jobbers quote 2.88c. for materials out of warehouse.

Old Material.—The market has been almost devoid of consumptive buying during the past week and further weakness in prices has developed. However, some sellers who participated in the recent speculative movement refuse to offer material at concessions, being confident that demand will revive and force prices upward. It is evident that a few good-sized inquiries from users are needed to clarify the atmosphere. Railroad lists are very large this week and in the minds of consumers do not augur well for a steady market. The Burlington is readvertising 7500 tons; the North Western offers 8000 tons; the Baltimore & Ohio 10,000 tons; the Pennsylvania, Northwestern and Southwestern Regions, 3500 tons each; the Santa Fé 2000 tons; the Monon 875 tons; the Baltimore & Ohio Chicago Terminal, 630 tons; and the Michigan Central and the Erie, blank lists.

We quote delivery in consumers' yards Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton

Iron rails	$17.00 to $17.50
Relaying rails	25.00 to 30.00
Car wheels	16.50 to 17.00
Steel rails, rerolling	13.50 to 14.00
Steel rails, less than 3 ft.	13.75 to 14.25
Heavy melting steel	12.00 to 12.50
Frogs, switches and guards cut apart	12.00 to 12.50
Shoveling steel	11.50 to 12.00
Low phos. heavy melting steel	15.50 to 16.00
Drop forge flashings	8.00 to 8.50
Hydraulic compressed sheet	8.50 to 9.00
Axle turnings	8.50 to 9.00

Per Net Ton

Iron angles and splice bars	14.50 to 15.00
Steel angle bars	11.50 to 12.00
Iron arch bars and transoms	15.50 to 16.00
Iron car axles	20.00 to 20.50
Steel car axles	14.50 to 15.00
No. 1 busheling	9.50 to 10.00
No. 2 busheling	6.25 to 6.75
Cut forge	11.50 to 12.00
Pipes and flues	8.50 to 9.00
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	11.50 to 12.00
Steel knuckles and couplers	13.00 to 13.50
Coil springs	14.00 to 14.50
No. 1 machinery cast	13.75 to 14.25
No. 1 railroad cast	13.50 to 14.00
Low phos. punchings	12.00 to 12.50
Locomotive tires, smooth	11.00 to 11.50
Machine shop turnings	4.00 to 4.50
Cast borings	5.50 to 6.00
Stove plate	12.75 to 13.25
Grate bars	11.50 to 12.00
Brake shoes	11.50 to 12.00
Railroad malleable	13.00 to 13.50
Agricultural malleable	13.00 to 13.50
Country mixed	9.00 to 9.50

St. Louis

ST. LOUIS, Nov. 1.

Pig Iron.—The pig iron market experienced a lull last week. The biggest sale during the week was for about 200 tons, and there were no new inquiries for a larger quantity. The carload business was only fair, and very little interest one way or the other was shown by the trade. News of the calling off of the railroad strike was of little influence. The market is firm. Local producers are meeting the recent cut to $21, Chicago, although several sellers are holding at the old price of $22. Business of stove manufacturers, according to eight reporting interests to the Federal Reserve Bank, indicates sales in September 8 to 19 per cent under a year ago, but 14 to 44 per cent larger than in August. Buying of stoves and ranges continues on an immediate delivery basis, with the size of average orders the smallest in more than a decade. Several cars of ferromanganese were purchased during the week.

We quote delivered consumers' yards St. Louis as follows, having added to furnace prices $2.88 freight and war tax from Chicago and $5.91 from Birmingham:

Northern foundry, sil. 1.75 to 2.25	$23.88 to $24.88
Northern malleable, sil. 1.75 to 2.25	23.88 to 24.88
Basic	23.88 to 24.88
Southern foundry, sil. 1.75 to 2.25	24.91

Finished Iron and Steel.—The calling off of the railroad strike was so generally discounted by the belief that there would be none that the revocation of the order had little effect on the markets. The chief interest in structural steel was the awarding of the contract for the 1700 tons of shapes for the Omaha Commercial and Technical High School to Christopher & Simpson Iron Works, St. Louis. Local fabricators also are after the Shrine Mosque at Springfield, Mo., involving 230 tons of structural steel and 103 tons of bars, the general contractor being J. M. Olsen of Springfield. The low bidder for the extension of the filtration plant at Grand Rapids, Mich., involving 350 tons of bars rolled from billets, was Everett Winters, while Emil Gentz was second low bidder, the latter having built the original plant. The Wabash sent out an inquiry for 500 boiler tubes, but there was nothing else of consequence among the railroads. The Cape Girardeau (Mo.) Street Railroad, E. A. Hart, general manager, is to be improved with new rails and new steel cars. Sheets are showing more life than anything else, jobbers continuing to buy No. 24 gage and lighter. The report of the Eighth Federal Reserve Bank says that the improvement in hardware continues steadily. Nine leading interests report that, measured in tonnage, September sales were 12 per cent less to 9 per cent larger than a year ago, and but with one exception all firms show an increase of sales and shipments in September over August. Warehouse business shows some improvement during October, with prices unchanged.

For stock out of warehouse we quote: Soft steel bars, 2.87½c. per lb.; iron bars, 2.87½c.; structural shapes, 2.97½c.; tank plates, 2.97½c.; No. 10 blue annealed sheets, 3.47½c.; No. 28 black sheets, cold rolled, one pass, 4.10c.; cold drawn rounds, shafting and screw stock, 4.20c.; structural rivets, $3.77½ per 100 lb.; boiler rivets, $3.87½; tank rivets, 7/16 in. and smaller, 60-10 per cent off list; machine bolts, large, 55 per cent; small, 60 per cent; carriage bolts, large, 50-5 per cent; small, 55 per cent; lag screws, 60 per cent; hot pressed nuts, square or hexagon blank, $3.25; and tapped, $3.00 off list.

Coke.—The market for coke was rather quiet the last week. There were few inquiries and the purchase of 200 tons by a gas-making concern was the only sale of note. The carload business was light. Standard Connellsville foundry coke is still quoted at $4.75 to $5.50, which is being met by local by-product producers.

Old Material.—The market for old material continues weak, and dealers who have railroad material on track are making frantic efforts to dispose of it to brokers—at a loss. The fact that the threatened railroad strike is out of the way did not seem to have any bearing on the situation, due principally to the fact that consumers will not pay the prices demanded by dealers. Cast grades, however, are very scarce, and prices have advanced on No. 1 railroad cast and stove plate. Current railroad offerings include: Pennsylvania, 3500 tons; Atchison, Topeka & Santa Fe, 2500 tons; Cleveland, Cincinnati, Chicago and St. Louis, 2400 tons; Wabash, 500 tons; Chicago, Indianapolis & Louisville, 960 tons; St. Louis Southwestern, 500 tons, and an open list by the New York Central.

We quote dealers' prices, f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	$15.50 to $16.00
Steel rails, rerolling	13.50 to 14.00
Steel rails, less than 3 ft	13.00 to 13.50
Relaying rails, standard section	30.00 to 32.00
Cast iron car wheels	15.50 to 16.00
No. 1 heavy railroad melting steel	12.00 to 12.50
No. 1 heavy shoveling steel	11.50 to 12.00
Ordinary shoveling steel	11.00 to 11.50
Frogs, switches and guards, cut apart	12.00 to 12.50
Ordinary bundle sheet	7.00 to 7.50
Per Net Ton	
Heavy axles and tire turnings	$7.50 to $8.00
Iron angle bars	13.00 to 13.50
Steel angle bars	11.00 to 11.50
Iron car axles	20.00 to 20.50
Steel car axles	15.50 to 16.00
Wrought iron arch bars and transoms	15.50 to 16.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	11.00 to 11.50
Railroad springs	13.00 to 13.50
Steel couplers and knuckles	13.00 to 13.50
Locomotive tire, 42-in. and over, smooth inside	10.00 to 10.50
No. 1 dealers' forge	10.00 to 10.50
Cast iron borings	7.50 to 8.00
No. 1 busheling	11.00 to 11.50
No. 1 borings cut in sheets and rings	8.00 to 8.50
No. 1 railroad cast	16.00 to 16.50
Stove plate and light cast	13.50 to 14.50
Railroad malleable	11.50 to 12.00
Agricultural malleable	10.50 to 11.00
Pipes and flues	8.50 to 9.00
Heavy railroad sheet and tank	8.00 to 8.50
Light railroad sheet	5.50 to 6.00
Railroad grate bars	10.50 to 11.00
Machine shop turnings	6.00 to 6.50
Country mixed iron	8.00 to 8.50
Uncut railroad mixed	9.00 to 9.50
Horseshoes	11.00 to 11.50
Railroad brake shoes	10.50 to 11.00

Buffalo

BUFFALO, Nov. 1.

Pig Iron.—Quotations of $21 base for foundry iron, generally observed on small tonnages a few weeks ago, are not the rule now. The market has weakened and $20 and even $19.50 has been quoted on such orders as range from 200 to 400 tons. Radiator interests have bought at bargain prices, there is little doubt, but there is nothing authentic in the way of available information and rumored prices as low as $18.50 have not been substantiated; nor is there any specific information as to the tonnage involved in these purchases. One furnace which has announced it has been out of the market because its output has been sold for the remainder of the year has sold several small lots. Inquiry has been received regularly, but there is no disposition to take any new, large tonnages. One interest has sold 4500 tons and in several instances has gone below the $20 price. A furnace which has refrained from entering keen competition for a number of months has become more active and has sold iron at points widely removed from Buffalo. In order to meet competitive conditions at these points and by virtue of an excessive freight rate, the furnace price of this iron has been considerably below $21. It is unlikely that business for the rest of this year will be very heavy. While furnaces are not looking for a slump, they are not expecting any great tonnage to be booked.

We quote f.o.b. dealers' asking prices per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil	$20.00 to $21.00
No. 2X foundry, 2.25 to 2.75 sil	20.00 to 20.50
No. 2 plain, 1.75 to 2.25 sil	19.50 to 20.00
Basic	20.00 to 21.00
Malleable	20.00 to 21.00
Lake Superior charcoal	31.75

Finished Iron and Steel.—Further depletion of stocks has served to bring out some business in sheets and pipe. Cancellation of the railroad strike does not seem to have affected the market in the matter of new business. There was some flurry toward expediting shipment of material previously ordered, but, on the whole the prospect was not taken in an alarming way. Pipe business has held up consistently and demand for this product is more or less seasonal and the lull is likely to come early this month. A sheet mill has booked sufficient orders to continue its 50 per cent operation schedule for the remainder of the year. On No. 10 blue annealed sheets $2.25 is now quoted and $3 on No.

28 gage black. Car repair work has brought out an inquiry from a local repair shop for 200 tons of bolts and nuts—the largest in many months. No structural awards of any size have been made. Two new structural enterprises on which figures have been asked are an addition to a factory building of the National Biscuit Co., requiring 2000 tons of shapes and a new 600-room hotel, for which the requirements are not yet announced. Both are Buffalo projects. Bar prices are being shaded and the price of 1.60c. quoted by one mill did not bring business. The conclusion was that a Buffalo mill quoted 1.55c.

Warehouse Business.—While the improvement over the preceding month is being maintained, there is evidence that the cancellation of railroad strike instructions had the effect of slowing down warehouse business. When it became increasingly evident early in the week that the strike would not occur, the demand for warehouse products showed this trend. The volume of inquiry to warehouses is not increasing week by week to any appreciable extent, but there is no question sales have increased over September. Structural business in small sizes shows activity in some building enterprises and bar business is fair. Machine tool orders have likewise shown an increase which is indicative of increased shop operation.

We quote warehouse prices f.o.b. Buffalo as follows: Structural shapes, 2.90c.; plates, 2.90c.; plates, No. 8 gage, 3.25c.; soft steel bars and shapes, 2.80c.; hoops, 3.50c.; blue annealed sheets, No. 10, 3.55c.; galvanized steel sheets, No. 28, 5.25c.; black sheets, No. 28, 4.25c.; cold-rolled strip steel, 6.40c.; cold-rolled round shafting, 5.90c.

Old Material.—With the possibility of a railroad strike eliminated, there is a more confident feeling. With the exception of one, all mills are buying steel, but not in large lots. Demand is fairly steady and prices are stronger. No large sales have been made.

We quote dealers' asking prices per gross ton f.o.b. Buffalo as follows:

Heavy melting steel	$13.00 to $14.00
Low phos., 0.004 and under	16.50 to 17.50
No. 1 railroad wrought	13.00 to 14.00
Car wheels	16.00 to 17.00
Machine shop turnings	7.00 to 8.00
Cast iron borings	7.00 to 8.00
Heavy axle turnings	10.00 to 11.00
Grate bars	11.00 to 12.00
No. 1 busheling	10.00 to 11.00
Stove plate	14.50 to 15.00
Bundled sheet stampings	8.00 to 9.00
No. 1 machinery cast	17.00 to 17.50
Hydraulic compressed	10.50 to 11.50
Railroad malleable	13.00 to 14.00

Boston

BOSTON, Nov. 1.

Pig Iron.—The market has flattened out, sales in the New England district the past week being confined to a 100-ton lot of Alabama, silicon 2.25 to 2.75, at $19.50, furnace, to a Massachusetts consumer, and possibly a dozen car lots of Buffalo and Pennsylvania No. 2X and higher silicon iron. Most furnaces are quoting on last week's basis with a 50c. differential between No. 2 plain and No. 2X, and between No. 2X and No. 1X. In one instance a Pennsylvania furnace asks $1 differential. Those furnaces, especially in the Buffalo district, having a stock of high silicon iron on hand will moderate the differential, and one Buffalo furnace is asking a flat price of $20, furnace, regardless of silicon. This week it sold a car of iron, silicon 3.75 to 4.25, to a Connecticut foundry at $20, furnace. Foundries, generally speaking, show slightly more activity, but have sufficient iron on hand or on order to last them over the turn of the year. Radiator, stove, textile and piano foundries are extremely busy and unquestionably would place first quarter business at prices under those ruling to-day, were furnaces willing to accept such tonnages. Price cutting on foundry castings is less noticeable than it was a month or so ago, although when a large tonnage is involved melters do not hesitate to quote lower. Delivered pig iron prices follow:

East. Penn., silicon 2.25 to 2.75	$24.56 to $27.56
East. Penn., silicon 1.75 to 2.25	24.06 to 27.06
Buffalo, silicon, 2.25 to 2.75	25.46 to 26.49
Buffalo, silicon 1.75 to 2.25	25.46 to 25.96
Virginia, silicon 2.25 to 2.75	30.08 to 31.08
Virginia, silicon 1.75 to 2.25	29.58 to 30.58
Alabama, silicon 2.25 to 2.75	30.16
Alabama, silicon 1.75 to 2.25	29.66

Forgings.—The steel forgings market continues comparatively active, with prices in favor of the buyer. A Massachusetts manufacturer has placed a tonnage of semi-steel light castings at a price representing a drop of 70.68 per cent as contrasted with what was paid for the same kind of a casting in November, 1920.

Cast-Iron Pipe.—The cast-iron pipe market practically was at a standstill the past week. Manufacturers anticipate only scattered buying the rest of the month, but a good business later. Several of the important New England cities have asked for tentative prices on pipe to be delivered in the first quarter of 1922, but foundries, as a rule, are not willing to quote until the freight rate and other questions become more clearly defined. We quote per net ton in carload lots f.o.b. Boston and district on 1921 delivery, as follows: 3-in., $66.70; 4-in., $56.70; 6-in., $50.70; 10-in., and larger, $49.70, with a $4 differential on Class A and gas pipe.

Finished Material.—The Bay State Dredging & Contracting Co. was the low bidder on the proposed Neponsit River, Boston, bridge. Its bid for the steel girder type of bridge, involving 1270 tons of structural steel, was approximately $445,000. Award probably will be made this week. Bids for 900 tons of shapes for the bridge proper, and erection, ranged from $57 to $72. The Levering & Garrigues Co. is awarded 302 tons of shapes for a local telephone exchange building, and the Arthur C. Harvey Co., Boston, sold 100 tons of shapes and plates to the Boston Transit Commission. The following tonnages remain unlet: Bradbury Building, Boston, 200 tons; Providence, R. I., high school, 600 tons; Meisel Press Mfg. Co. plant, 200 tons. The demand for iron and steel products in general is quiet, with the market on plates, shapes and bars 1.60c., Pittsburgh. Cold-rolled steel, screw stock, has sold in this district in carload lots at 2.15c., base Pittsburgh.

Warehouse Business.—Following last week's slight reduction in warehouse prices on iron and steel an improvement in buying is noted. Large consumers, for the first time in months, are beginning to come into the market for small tonnages. Boston & Maine Railroad buying of ⅝-in. bolts and smaller features the bolt and nut market. The company's total purchases will exceed 100,000 bolts. The price has been cut 5 per cent on some of this business placed.

Jobbers now quote: Soft steel bars, $2.81½ per 100 lb. base; flats, $3.31½; concrete bars, $2.15 to $2.81½; tire steel, $4 to $4.40; spring steel, open hearth, $4.50; crucible, $11.50; steel bands, $3.73 to $3.78; steel hoops, $3.46½; toe calk steel, $5; cold rolled steel, $3.75 to $4.25; structural steel, $2.91½; plates, $2.91½ to $3.10; No. 10 blue annealed sheets, $3.73; No. 28 black sheets, $4.50; No. 28 galvanized sheets, $5.50; refined iron, $2.81½; best refined, $4.25; Wayne iron, $5.50; Norway iron, $5.50 base.

Coke.—With the railroad strike abandoned, New England foundries are less anxious to stock coke other than for winter requirements, consequently a decrease in shipments from by-product ovens is noted. Both the New England Gas & Coke Co. and the Providence Gas Co. continue to quote foundry coke on a basis of $10.66 delivered where the local freight does not exceed $3.40. The Trunk Line Coal and Coke Committee, the Boston & Maine, the Maine Central and the Canadian Pacific railroads have approved a new schedule of freight rates on all grades of coke from Boston to Canadian points, which compares as follows:

	Present Rate	Approved Rate
St. John, N. B.	$8.10	$4.60
Moncton, N. B.	9.20	7.00
Sackville, N. B.	9.20	7.60
Truro, N. B.	9.20	8.20
Amherst, N. S.	9.24	7.60
North Sydney, N. S.	14.40	9.30

These rates apply to shipments via Vanceboro, over the Boston & Maine, Maine Central and Canadian Pacific railroads only. They now go to the Interstate Commerce Commission for its approval. The Trunk Line Coal and Coke Committee and railroads are working on new proposed rates to such points as Charlottetown, P. E. I.; Halifax, N. S.; New Glasgow, N. S.; Windsor, N. S., and Yarmouth, N. S., and it is proposed to work out new rates to the above mentioned places over routes other than via Vanceboro. New freight rates from Boston to Montreal and similar points are under consideration. It is roughly estimated 25,000 to 35,000 tons of foundry coke alone are

exported to the Montreal district annually. At best, the above approved rates to Canada will not become effective until some time in December.

Old Material.—Prices hold strong all along the line, but there appears to have been a slowing up in business since the railroad strike was called off. The demand for borings and turnings is relatively better than that for anything else and the market is about 50c. a ton higher. Several car lots of textile machinery cast have sold this week at $18.50 to $20, delivered, depending on the point of delivery, and some carload inquiries for No. 1 machinery are noted. Pennsylvania steel mills are showing increased interest in heavy melting steel, etc., and dealers here expect to book considerable tonnage this month.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$19.00 to $20.00
No. 2 machinery cast	17.00 to 18.00
Stove plate	16.00 to 16.50
Railroad malleable	13.50 to 14.50

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$7.50 to $8.00
No. 1 railroad wrought	11.00 to 11.50
No. 1 yard wrought	9.00 to 9.50
Wrought pipe (1-in. in diameter, over 2 ft. long)	8.00 to 8.50
Machine shop turnings	3.75 to 4.00
Cast iron borings, rolling mill	5.00 to 5.50
Cast iron borings, chemical	5.50 to 6.00
Blast furnace borings and turnings	3.75 to 4.00
Forged scrap and bundled skeleton	4.50 to 5.00
Street car axles and shafting	12.50 to 13.00
Car wheels	11.50 to 12.00
Rerolling rails	10.00 to 10.50

Cincinnati

CINCINNATI, Oct. 31.

Pig Iron.—There is very little activity in the market, sales being entirely confined to carload lots and even these being widely scattered. The only live inquiry comes from a central Ohio stove maker for 150 tons of Southern iron. An Illinois melter was in the market last week for 500 tons of high silicon malleable iron, but later decided not to buy. It is understood that the Chattanooga melter who recently inquired for 1000 tons of malleable for first half delivery has decided to wait a while before placing the order. It is reported that the lowest quotation received was on a $21, Ironton, basis. The American Radiator Co. is reported to have bought 1000 tons of Southern iron for its Birmingham plant. There is a softer tone to the market and Chicago iron has been offered by brokers at $20.50. Considerable Southern resale iron is still available at $18.50 and a lake furnace is reported to have quoted $19.75 in the northern part of Ohio. The Ironton producer is holding at $21 and a steel works interested is reported to be taking some carload orders for high manganese iron on a $21.50 base. Shipments from furnaces are fairly satisfactory, and are showing a gradual improvement with each week.

Based on freight rates of $4.50 from Birmingham and $2.52 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$23.50
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	24.00
Ohio silver, 8 per cent sil	32.86
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	23.52
Basic, Northern	22.52
Malleable	24.02

Finished Material.—The market slumped off during the past week and carload orders for fill-in purposes were about the only activity. A sale is reported of 80 tons of cold-rolled shafting at 2.25c. and an equal tonnage of bars at 1.65c. This business was placed early in the week. The market to-day on bars, shapes and plates ranges from 1.60c. to 1.65c., and these prices are now generally quoted. Sheet business has also fallen away to very small proportions, fill-in tonnages representing the market activity. There is still a small demand for wire and wire products. The only new project to come up in the structural field was some bridge work for the Big Four Railroad, 360 tons being involved. Plant operations will continue at the same rate as last week. The east side plant of the American Rolling Mill Co. is running at full capacity, with nine mills operating at Zanesville. The Whitaker-Glessner Co. will continue its former rate of operations and the Newport Rolling Mill Co. will again be idle.

Warehouse Business.—Numerous small orders are being received and in view of general conditions orders booked are regarded as satisfactory. There was some activity in cold-rolled products during the week, the orders, however, being for small lots for immediate delivery. Quotations remain unchanged.

Iron and steel bars, 3c. base; hoops and bands, 3.75c. base; shapes, 2.85c. base; plates, 2.85c. base; reinforcing bars, 3.07½c. base; cold rolled rounds, 1½ in. and larger, 4.10c.; under 1½ in. and flats, squares and hexagons, 4.75c.; No. 10 blue annealed sheets, 3.50c.; No. 28 black sheets, 4.25c.; No. 28 galvanized sheets, 5c.; wire nails, $3.25 per keg base; No. 9 annealed wire, $3.00 per 100 lb.

Coke.—There was a flurry in the coke market during the week and several good sales were made though the majority of the transactions were in one and two car lots. There is a tendency on the part of melters to store a supply of coke against winter needs as reports of car shortages are being heard. There are no developments to report in the price situation, Connellsville furnace coke being quoted at $3.25 to $3.50 and foundry $4.25 to $5. Wise County foundry coke is quoted at $5.75 to $6.50 and New River $7 to $7.50.

Old Material.—The scrap market is exceedingly dull, as most of the consumers in this market are not running full and have big stocks on hand. Some cast scrap sales are reported, mostly in carload lots. Prices are weaker, but quotably unchanged in the absence of trading.

We quote dealers' buying prices, f.o.b. cars:

Per Gross Ton	
Bundled sheets	$4.50 to $5.50
Iron rails	12.50 to 13.00
Relaying rails, 50 lb. and up	25.50 to 26.50
Rerolling steel rails	11.00 to 12.00
Heavy melting steel	9.50 to 10.00
Steel rails for melting	9.50 to 10.50
Car wheels	12.50 to 13.50
Per Net Ton	
No. 1 railroad wrought	9.00 to 10.00
Cast borings	3.50 to 4.00
Steel turnings	2.50 to 3.00
Railroad cast	12.50 to 13.00
No. 1 machinery	14.00 to 15.00
Burnt scrap	8.00 to 9.00
Iron axles	16.00 to 17.00
Locomotive tires (smooth inside)	10.00 to 10.50
Pipes and flues	4.50 to 5.50

Birmingham

BIRMINGHAM, Nov. 1.

Pig Iron.—The smallest business in pig iron in some time was that of last week. One maker sold 500 tons in small lots for prompt shipment and none laid claim to much business. The tone of the market, however, was not affected and it remained firm at $19. Hope of early reduction in freight rates is credited with the lull in buying. This is especially true with regard to Middle Western takers of Birmingham iron, who were in the market three weeks ago, but are not now and seem to be holding aloof as long as possible pending lower freight rates. Six merchant furnaces in Alabama are active, but none is piling stocks. A prominent operator said: "The situation is well in hand so long as additional stacks do not blow in. The Southern consumers are caring for the present production owing to increased iron consumption in the South." It is noteworthy that numbers of independent shops are doing a lot of railroad car repairing which the trunk lines prefer having them do to operation of their own large plants on account of overhead. Several Alabama shops have all they can do. The mines and furnaces have also begun to send work to machine shops that had not been seen in that quarter in months. The repair shops of all kinds are more and more busy. Movements from yards are heavy, especially from the one really large stock accumulation. Current sales of iron are restricted to the South. Some few export orders of small tonnages for South America have been placed in the past month, but the total is not large. Melt at stove plants and pipe shops is largest of the year.

We quote per gross ton f.o.b. Birmingham district furnaces, as follows:

Foundry, silicon 1.75 to 2.25	$19.00
Basic	18.00
Charcoal, warm blast	35.00

Finishing Mills.—The Tennessee company operations are larger this week, including its structural mill at

Fairfield, plate, guide and bar mills at Bessemer, double turn at Ensley rail mill, five of the nine open-hearth furnaces, four furnaces on basic iron, car works and tie-plate plant at Fairfield. The car works has attained a daily output of 13 pressed steel standard freight cars. The Gulf States Steel Co. is at 70 per cent in finishing mills and operating three of its six open-hearth furnaces. Other steel mills report no change in operations of 50 to 70 per cent.

Cast Iron Pipe.—Many small orders from all over the South and Southwest swell new tonnage of high pressure pipe shops, which reiterate expectation of a good run to the end of the year. Lower freight rates would bring faraway business in the West that still hangs fire. All but one of the dozen Anniston sanitary pipe shops are running. The high pressure base is now $33 to $35 and prevalent base of sanitary remains at $40.

Coal and Coke.—Coal and coke are stronger. Foundry coke is moving all over the South, Southwest and to Pacific Coast. One steam coal producer was forced to decline additional orders this week. Coke base is $5.50 to $6.

Old Material.—Temporary improvement in the scrap market gave way under the threat of strike, but dealers look for improvement in the next ten days and seem confident of price advances, especially as to steel. Dealers are holding to accumulations rather than sell steel at the base offered by consumers. No. 1 cast and stove plate are fairly active.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Steel rails	$11.00 to $12.00
No. 1 steel	10.00 to 11.00
No. 1 cast	15.00 to 16.00
Car wheels	15.00 to 16.00
Tramcar wheels	12.00 to 13.00
No. 1 wrought	13.00 to 14.00
Stove plate	11.00 to 12.00
Cast iron borings	6.00 to 7.00
Machine shop turnings	6.00 to 7.00

New York

NEW YORK, Nov. 1.

Pig Iron.—A decided lull has come and it is attributed to the fact that there was considerable increase in shipments and moderate addition to new buying on account of the fear of a railroad strike. Hence, it is expected that the shipments this month will show a marked decrease compared with those for October, although there is some evidence that the melt of jobbing foundries is increasing. There is no decided change in prices, but reports from Buffalo indicate weakness in that district. Although a cast iron pipe manufacturer stated that he purchased 1000 tons of Luxemburg iron at $19 c.i.f. Atlantic port, it is positively asserted that no quotation within several dollars of $19 can now be obtained and that apparently $24 is the minimum without any guarantee as to delivery. The iron is above 1 per cent in phosphorus. On the whole, the efforts of representatives of foreign irons to place orders in this country are not arousing much interest.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $5.46 from Buffalo and $6.16 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25	$24.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	23.52
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	23.02
Buffalo, sil. 1.75 to 2.25	25.46
No. 2 Virginia, sil. 1.75 to 2.25	29.16

Finished Iron and Steel.—Structural steel projects reported in this market for the past week total close to 11,000 tons and quite a number of projects are pending. October has shown an improvement in nearly all steel lines. A large independent steel company which keeps a daily curve record of its orders in the New York district reports that sales since Aug. 1 have shown a steady upward tendency, with October as the best month of the year. This particular company is now operating its mills and furnaces close to 50 per cent. On all sizable steel projects there is keen price competition. Pittsburgh and other mills which have quoted as low as 1.50c., Pittsburgh, in plates, shapes and bars have sometimes lost the business to Eastern mills whose prices are figured f.o.b. mill with lower freight rates than the Pittsburgh-New York rate of 38c. per 100 lb. About 5000 tons of reinforcing bars for the Jamaica Boulevard has been bought at or about 1.80c., delivered. An order was placed a few days ago for 600 tons of plates at a price said to be 1.50c., Pittsburgh. On ordinary lots of steel 1.60c., Pittsburgh, is being frequently obtained for plates, shapes and bars. The market is devoid of important developments, but there is considerable interest in the bidding on 20,000 tons of plates for the Catskill aqueduct water pipe project. Bids will be opened Nov. 10 by the Board of Water Supply, New York. The largest structural steel job of the week is about 5000 tons for the new Saks' department store at Fifth Avenue and Fifty-seventh Street, which was awarded to Post & McCord. Second in importance was 2200 tons for the Beth Israel Hospital, Brooklyn, awarded to the Harris Structural Steel Co. The Bethlehem Steel Bridge Corporation will fabricate 1700 tons for a bridge over the Lehigh River at Bethlehem, Pa. The same company was awarded 260 tons for a high school building at Kearney, N. J. For the Jamaica Boulevard project 600 tons of fabricated steel has been awarded to parties unnamed. Two jobs have been let in Boston, one of 700 tons for the Federal Street Trust Building at the New England Structural Steel Co. and the other amounting to 225 tons for the Bradbury Building to an unnamed fabricator. The American Bridge Co. was awarded 300 tons for the Hancock Building, Syracuse, N. Y. Bids have gone in on a loft building at West Thirty-fourth Street, New York, requiring 400 tons; an apartment house at Seventh Avenue and Fifty-seventh Street, 800 tons; and an apartment building in East Eighty-eighth Street, 350 tons. The threatened railroad strike held back railroad car work last week, and the only inquiry of importance is from the Illinois Central for 2000 50-ton gondolas. The Chicago, Milwaukee & St. Paul is expected to place orders this week for 2500 gondolas and the Denver, Rio Grande and Western may buy 1000 gondolas this week.

We quote for mill shipments, New York, as follows: Soft steel bars, 1.80c. to 1.88c.; plates, 1.88c. to 2.03c.; structural shapes, 1.88c. to 2.03c.; bar iron, 1.98c. to 2.03c. On export shipments the freight rate is now 28.5c. per 100 lb., instead of 38c., the domestic rate.

Ferroalloys.—There is practically no demand for ferromanganese and quotations remain unchanged with the domestic and British alloys on a parity as to delivered price. Demand for spiegeleisen is light. An Ohio steel maker has bought 200 tons of 19 to 21 per cent alloy and there has been a sale also of a carload. The manganese ore market is flat. Sales of about 1800 tons of 50 per cent ferrosilicon are reported at prices ruling very recently. Quotations are as follows:

Ferroalloys

Ferromanganese, domestic, delivered, per ton,	$60.00 to $63.00
Ferromanganese, British, seaboard, per ton.	$58.35
Spiegeleisen, 20 per cent, furnace, per ton,	$25.00 to $26.00
Ferrosilicon, 50 per cent, delivered, per ton,	$56.00 to $60.00
Ferrotungsten, per lb. of contained metal	48c. to 58c.
Ferrochromium, 6 to 8 per cent carbon, 60 to 70 per cent Cr., per lb. Cr., delivered	10c. to 11c.
Ferrovanadium, per lb. of contained vanadium	$4.50
Ferrocarbontitanium, 15 to 18 per cent, net ton	$200.00
Ferrocarbontitanium, 15 to 18 per cent, 1 ton to carloads, per ton	$220.00
Ferrocarbontitanium, 15 to 18 per cent, less than 1 ton, per ton f.o.b. Niagara Falls, N. Y.	$250.00

Ores

Manganese ore, foreign, per unit, seaboard	20c.
Tungsten ore, per unit, in 60 per cent concentrates	$2.50 up
Chrome ore, 40 to 45 per cent Cr_2O_3, crude, per net ton, Atlantic seaboard	$20.00 to $25.00
Chrome ore, 45 to 50 per cent Cr_2O_3, crude, per net ton, Atlantic seaboard	$30.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	55c. to 60c.

Warehouse Business.—While no important changes have been made in the quotations of warehouses in this

district, there is an undercurrent of feeling on the part of some jobbers that quotations on bars, plates and structural material should be revised again in accordance with the prevailing mill quotations. The recent mill increase on blue annealed sheets has resulted in practically all warehouses going to a base of 3.53c. per lb. for No. 10 gage, which has been the prevailing price among dealers in small lots of a few sheets for the past two weeks. Dealers in wrought iron and steel pipe note but little change in the dullness of the situation in this line, despite the fact that the fall of the year is generally the most active time for pipe contracts. No further changes of these prices are evidently contemplated at present. Brass and copper warehouses continue to report improved demand and considerable stiffening of the prevailing quotations. We quote prices on page 1198.

High Speed Steel.—The situation is extremely dull, although some demand for tool steel is reported by warehouses. One large producer of high speed steel has reduced his price on 18 per cent tungsten to 90c. per lb. and a special brand to $1.05 per lb. The prevailing quotations are from 90c. to $1 per lb. for 18 per cent tungsten high speed steel.

Cast-Iron Pipe.—October business was very satisfactory considering the season of the year. Prices are holding firm on small tonnages, though sizable inquiries bring lower quotations. We quote per net ton, f.o.b. New York, carload lots, as follows: 6-in. and larger, $47.30; 4-in. and 5-in., $52.30; 3-in., $62.30; with $4 additional for Class A and gas pipe.

Coke.—The coke market is weaker, due largely to the moderate increase in activity and advance in prices on account of a fear of a railroad strike. Prices on Connellsville foundry grades range from $4.25 to $4.75, ovens, and on New Jersey by-product coke the price is $4.50.

Old Material.—The long gradual upswing of prices has been halted and a reaction has set in with a few items, notably pipe, whose tendency is downward. There has been less buying by mills the past week and the prospects of lower freight rates have had the effect of halting business and perhaps lowering prices. It is believed that lower freight rates would increase the volume of sales and work against further raising of prices.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard	$8.00 to $8.50
Steel rails, short lengths, or equivalent	9.50 to 10.00
Rerolling rails	11.50 to 12.00
Relaying rails, nominal	30.00 to 35.00
Steel car axles	11.50 to 12.00
Iron car axles	20.00 to 20.50
No. 1 railroad wrought	12.00 to 12.50
Wrought iron track	9.50 to 10.00
Forge fire	6.00 to 6.50
No. 1 yard wrought, long	10.50 to 11.00
Light iron	4.50 to 5.00
Cast borings (clean)	5.50 to 6.00
Machine-shop turnings	4.00 to 4.50
Mixed borings and turnings	4.00 to 4.50
Iron and steel pipe (1 in. diam. not under 2 ft. long)	8.75 to 9.25
Stove plate	10.50 to 11.00
Locomotive grate bars	10.00 to 10.50
Malleable cast (railroad)	8.50 to 9.00
Car wheels	12.50 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries, per gross ton, follow:

No. 1 machinery cast	$17.00 to $18.00
No. 1 heavy cast (columns, building materials, etc.), cupola size	16.00 to 17.00
No. 1 heavy cast, not cupola size	15.50 to 16.00
No. 2 cast (radiators, cast boilers, etc.)	10.00 to 10.50

The Massillon Reinforcing Bar Co., Massillon, Ohio, has completed its new re-rolling mill plant which is equipped with a 15-in. mill. The company will make hard steel bars, re-rolled from rails, both plain and deformed, in all standard sizes, and will install equipment for fabricating its product. The company's general sales office has been opened at 534 Bulkley Building, Cleveland. K. E. Wagner is the general sales manager.

The American Hardware Corporation, New Britain, Conn., on Monday began to operate one of its largest subsidiary plants on a basis of 55-hr. weekly and with practically a full number of employees on its payroll.

Philadelphia

PHILADELPHIA, Nov. 1.

The possibility of freight rate reductions is overhanging the market, causing consumers to withhold orders and creating an atmosphere of uncertainty that will remain as an important market factor until definite information comes from the Interstate Commerce Commission. In some quarters doubt is expressed that a horizontal cut in freight rates will be made, the belief being that reductions will be made in specific instances, such as the recent change in iron ore rates. Consumers seem to take the view that lower freight charges will mean lower prices, but with pig iron and steel products, with few, if any exceptions, now selling at cost or less, producers dissent from this view and declare that any advantage accruing to them because of freight rate reductions will only partially make up for the losses they are now incurring. In steel products, particularly plates, shapes and bars, there is marked weakness in prices, but this is due to keen competition for business and not in anticipation of any savings in costs by reason of lower freight rates. Even in scrap, which is not a manufactured product in the same sense that are pig iron and finished steel, it is stated that there will be no saving to the buyer following freight rate reductions, but that the advantage will go to the producer or shipper, who for a considerable time has been forced to accept very low prices because of the large amount taken up by transportation costs.

Consumers advance another reason for their unwillingness to buy more freely at this time—they are anxious to go through the approaching inventory period with the lowest possible stocks on hand. With these factors as a checkmate to buying, the trade here is not looking for more than hand-to-mouth purchasing of the most careful character until after the first of the year.

While pig iron and old material are firm, with scrap prices advancing slightly each week, the steel situation continues to show weakness. Any attractive specification for plates, shapes or bars can now command a price of 1.50c., Pittsburgh, and in some instances even this figure has not been low enough to take business. A steel pipe fabricator who is figuring on an oil pipe line has inquired for 20,000 tons of narrow plates, with an intimation that better than 1.50c., Pittsburgh, must be quoted.

Pig Iron.—With prices for foundry iron now firmly established at a minimum of $21 for No. 2 plain at furnace, some of the Eastern makers of iron are now considering what policy they shall follow for first quarter contracts, regarding which a few consumers have made inquiry. Up to this time the Eastern furnaces have shown little disposition to quote beyond the first of the year, and if first quarter prices are named soon they will probably be at least $1 or $2 a ton above those prevailing for spot iron. The blowing in of the Reading and Hellertown furnaces will make four active merchant furnaces in eastern Pennsylvania, in addition to those of the Bethlehem Steel Co and one in New Jersey. All of the Virginia furnaces continue out of blast, with no prospects of early resumption. It is reported that a Virginia pipe foundry has purchased 3000 tons of iron in the Birmingham district at $18.50, furnace. No large sales are reported in the Philadelphia district, except one lot of 1500 tons of basic, for which a steel company is reported to have paid $20, furnace, with a freight rate slightly under $1. A sale of 100 tons of gray forge is reported at $21, furnace, with a freight rate of $1.54. There is a fairly good demand for carload lots of high silicon iron, for which $25, furnace, has been paid in some instances for iron analyzing close to 4 per cent silicon.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia, and include freight rates varying from 84 cents to $1.54 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$21.90 to $22.54
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.84 to 23.54
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.74 to 28.74
Virginia No. 2X, 2.25 to 2.75 sil.	28.24 to 29.74
Basic deliv. eastern Pa.	20.50 to 21.00
Gray forge	22.50 to 23.00
Malleable	24.00 to 25.00
Standard low phos (f.o.b. furnace)	36.50
Copper bearing low phos. (f.o.b. furnace)	35.00

Ferroalloys.—Domestic producers of ferromanganese have turned down offers of $50, seaboard, for 78 to 82 per cent alloy and are holding firmly for $58.35, seaboard, which is also the British price. Spiegeleisen is quoted from $25 to $27, furnace.

Billets.—The market is weak and open-hearth rerolling billets have been quoted at $28, Pittsburgh. Some sales have been made at $29. Forging billets are quoted at $34, Pittsburgh.

Plates.—The plate market continues exceedingly weak, with keen competition for any desirable business. It is now comparatively easy for a buyer of a fairly good lot to obtain quotations of 1.50c., Pittsburgh, and even this price does not appear firm. A steel pipe fabricator has inquired for 20,000 tons of universal plates for a 12-in. pipe line, but has named a price so low that one or two mills in this district have declined to quote. Business is made up almost entirely of small orders. The Coatesville mills of the Midvale Steel & Ordnance Co. are rolling about 3000 tons of plates for the 85 locomotives for Argentina recently booked by the Baldwin Locomotive Works. We quote sheared plates at 1.50c. to 1.60c., Pittsburgh, the higher price obtaining on small lots.

Structural Shapes.—Fabricators are figuring so closely on structural steel work that low prices on shapes have naturally followed. Quotations of 1.50c., Pittsburgh, on attractive tonnages have now become common, and higher prices are not effective in getting business except small lots.

Bars.—For reinforcing bars 1.50c., Pittsburgh, is now a general quotation, while 1.55c. and 1.60c., Pittsburgh, is being paid for merchant steel bars. The nominal quotation for bar iron is 1.60c., Pittsburgh, but this is being shaded by some mills.

Sheets.—The top prices at which business is being done are 2.50c. for blue annealed, 3c. for black and 4c. for galvanized, base, Pittsburgh. These prices have been shaded in some instances. Sheet mills are operating fairly well on specifications entered on their books some weeks ago, but new orders are not plentiful.

Rails.—It now appears that a main reason for the recent reduction of $7 a ton on rails was the refusal of some of the railroads to specify against their contracts. The price reduction was made retroactive to Aug. 25, last, applying therefore to some tonnage which had been shipped. One of the large Eastern roads is reported to have refused to accept further shipments this year, even at the reduced price.

Warehouse Business.—Jobbers continue to do a moderate business, but the volume is not growing. Prices for this district are unchanged, local jobbers quoting for Philadelphia delivery as follows:

Soft steel bars and small shapes, 2.75c.; iron bars (except bands), 2.50c.; round edge iron, 2.80c.; round edge steel, iron finish, 1½ x ½ in., 3.05c.; round edge steel planished, 3.80c.; tank steel plates, ¼-in. and heavier, 2.85c.; tank steel plates, 3/16-in., 3.035c.; blue annealed steel sheets, No. 10 gage, 3.25c.; light black sheets, No. 28 gage, 4c.; galvanized sheets, No. 28 gage, 5c.; square twisted and deformed steel bars, 2.75c.; structural shapes, 2.85c.; diamond pattern plates, ¼-in., 4.60c.; 3/16-in., 4.785c.; ¼-in., 4.90c.; spring steel, 4.10c.; round cold-rolled steel, 3.75c.; squares and hexagons, cold-rolled steel, 4.25c.; steel hoops, No. 13 gage and lighter, 3.65c.; steel bands, No. 12 gage to 3/16-in., inclusive, 3.40c.; iron bands, 3.90c.; rails, 2.75c.; tool steel, 8c.; Norway iron, 5c.; toe steel, 4.50c.

Old Material.—There is almost a deadlock in trading in scrap. Some of the mills offer prices that dealers will not accept and the mills, unless in urgent need of material, will not buy at the prices which the dealers quote. It remains, however, that each sale of importance brings out a price higher than obtained the week before. Many grades have advanced from 50c. to $1.50 a ton within the past month. Blast furnace borings and turnings are in demand, but are not to be had at the prices which the furnaces seem willing to pay. Among the grades which are higher this week are low phosphorus steel, car wheels, cast borings, railroad grate bars and stove plate. An Eastern steel plant has about 3000 tons of low phosphorus scrap in storage, for which it is asking $20 a ton. Eighteen steel companies in the Pittsburgh, Youngstown and Buffalo districts have petitioned the Interstate Commerce Commission for a reduction in freight rates on scrap from the billet basis to the pig iron basis. We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$12.00 to $13.00
Scrap rail	12.00 to 13.00
Steel rails, rerolling	16.00 to 16.50
No. 1 low phos., heavy 0.04 and under	17.00 to 18.00
Car wheels	17.50 to 18.00
No. 1 railroad wrought	16.00 to 16.50
No. 1 yard wrought	14.00 to 14.50
No. 1 forge fire	10.50 to 11.00
Bundled sheets (for steel works)	9.50 to 10.00
No. 1 busheling	12.00 to 13.00
No. 2 busheling	10.00 to 11.00
Turnings (short shoveling grade for blast furnace use)	9.00 to 9.50
Mixed borings and turnings (for blast furnace use)	9.00 to 9.50
Machine-shop turnings (for rolling mill and steel works use)	9.50 to 10.50
Heavy axle turnings (or equivalent)	10.00 to 10.50
Cast borings (for rolling mills)	11.00 to 11.50
Cast borings (for chemical plants)	12.50 to 13.00
No. 1 cast	17.50 to 18.00
Railroad grate bars	14.50 to 15.00
Stove plate (for steel plant use)	14.50 to 15.00
Railroad malleable	14.50 to 15.00
Wrought iron and soft steel pipes and tubes (new specifications)	13.50 to 14.00
Iron car axles	No market
Steel car axles	No market

Cleveland

CLEVELAND, Nov. 1.

Iron Ore.—A reduction in dock charges for handling ore has been virtually assured as a result of a conference between a committee of ore men representing the Lake Superior Iron Ore Association and representatives of consumers in the Pittsburgh, Youngstown and Wheeling districts, and the coal, coke and ore committee of the Central Traffic Association, representing ore carrying railroads, held in Pittsburgh Oct. 27. The committee of railroad men explained that it had been the evident intention to reduce the dock charges correspondingly at the same time as the railroad rates for carrying ore from lower lake docks was reduced 28 per cent, but this readjustment was overlooked. The committee formally approved the request of the ore shippers and consumers that the dock handling charges be reduced and will make a recommendation to that effect to the railroad executives in New York. Action ordering the reduction is expected this week. The new rates will become effective as soon as the tariffs can be prepared and will bring the dock handling charges back to where they were before the 40 per cent advance made in September, 1920. The ore men and furnace interests were given to understand that the reductions would remain in effect through 1922. The reduction in ore carrying charges was made only for the period up to Jan. 1, next, but there is no expectation that the old rates will again be placed in effect. When the new dock charges become effective, the charge for handling from the hold to the rail of the vessel will be reduced from 14c. to 10c. per ton, from the rail to the dock stock pile, from 22½c. to 16c., and from the dock to the car, from 14c. to 10c. It is expected that the dock storage charge will be reduced from 1½c. to the old rate of 1c. per ton per month, but definite announcement of this reduction has not been made. The reduction in dock charges will result in a saving of 10½c. a ton to consumers in the handling of ore that goes on the dock, the present charges for handling from the vessel to the dock and from the dock to the car being reduced from 36½c. to 26c. The hearing on the rail rate case of the Northern railroads involving the carrying charges of ore from the mines to upper lake ports has again been postponed by the Interstate Commerce Commission, this time from Nov. 16 to Dec. 7. Several ore shippers, including the United States Steel Corporation, have finished moving ore, but a few cargoes will be shipped by other firms during November. However, it is not expected that the November movement will exceed 200,000 tons and shipments will probably be wound up by Nov. 15.

We quote delivered lower lake ports: Old range Bessemer, 55 per cent iron, $6.45; Old range non-Bessemer, 51¼ per cent iron, $5.70; Mesabi Bessemer, 55 per cent iron, $6.20; Mesabi non-Bessemer, 51½ per cent iron, $5.55.

Pig Iron.—October shipments were the best of any month this year, but this was partly due to the fact that many consumers at the time there was danger of a railroad strike anticipated their November requirements in shipping orders. Consequently, November shipments are expected to show considerable falling off as compared with the past month. The market has again become very dull. The only orders of any size reported are 700 tons of foundry iron placed by the American Radiator Co., 400 tons for its Titusville, Pa., plant, and 300 tons for its Springfield, Ohio, plant. One producer sold only 900 tons of iron during the week and another 500 tons, all in small lots of foundry iron. The market is holding firm at $20 lake furnace for No. 2 foundry iron, and this price is enabling lake furnaces to shut out the competition of Valley furnaces, which quote $21, for shipment to points having the same freight rate and to points where the lake furnaces have a disadvantage in freight rate of less than $1 a ton as compared with Valley furnaces. Although the American Rolling Mill Co. was credited with the purchase of 3000 tons of basic iron at $22 delivered, it develops that its purchases were made at $19.50 at furnace, making the delivered price $22.16 for 2000 tons placed with a lake furnace and $22.02 for 1000 tons placed with a southern Ohio producer. Reports indicate that basic iron can be bought from brokers at under $19. M. A. Hanna & Co. blew in one of their Detroit furnaces today, Tuesday. The starting of one of these furnaces was necessitated by the fact that this firm's stock of pig iron in Detroit was running low. The McKinney Steel Co. expects to blow in a second furnace in Cleveland this month.

Quotations below are f.o.b. local furnace for northern foundry iron, not including a 56c. switching charge. Other quotations are delivered Cleveland, being based on a $1.96 freight rate from Valley points, a $3.36 rate from Jackson and a $6.67 rate from Birmingham:

Basic	$20.96
Northern No. 2 fdy., sil. 1.75 to 2.25	$20.50 to 21.00
Southern fdy., sil. 2.25 to 2.75	26.17
Ohio silvery, sil. 8 per cent	32.86
Standard low phos., Valley furnace	35.00

Coke.—The demand for foundry coke is less active than it has been. Prices are unchanged at $4.50 to $4.75 for the better makes of Connellsville foundry coke and $6 for Virginia coke.

Bolts, Nuts and Rivets.—The demand for bolts and nuts is confined to small lots, consumers buying only for their immediate requirements. The volume of October business was about the same as during September. While regular prices, as a rule, seem to be maintained, concessions are still being made by some manufacturers. The demand for rivets is slow and prices are not firm, although the leading local maker is adhering to 2.40c. for structural and 2.50c. for boiler rivets.

Sheets.—The demand is light and mills do not look for much new business this year, as consumers placed contracts before the recent price advance by some of the mills. The market is well established at 3c. for black and 2.25c. to 2.50c. for blue annealed sheets, and mills that are quoting $5 a ton above those prices on blue annealed and galvanized sheets are taking a limited amount of small lot business, but there is evidence that the 4c. price on galvanized sheets can be shaded $1 to $2 a ton on desirable orders.

Cold-Rolled Strips.—Strip steel makers mave stiffened up on cold-rolled strip steel, on which 4c. now appears to be the minimum price. Cold-rolled strip steel is coming into active competition with full finished automobile sheets as material for motor car fenders, and a recent order for 100 tons was for that use.

Finished Iron and Steel.—New business is light and orders are virtually all for small tonnages. The brightest spot at present seems to be in the building field, as fabricators are figuring on considerably more work than they have been for some time. The demand for steel among manufacturers in various metal working lines shows small increase, as plant operations have improved but little while plates are generally quiet. A northern Ohio tank shop has taken oil tank work requiring 4000 tons of plates which will probably be supplied by a Youngstown mill. Plates are generally quoted at 1.60c. to 1.65c., although mills not meeting these prices are booking small lot orders at 1.75c. Soft steel bars are selling in small lots at 1.60c. to 1.65c., and buyers lately have been unable to get lower quotations in this territory. However, it is believed that a round tonnage would bring out a price lower than 1.60c. Soft steel bars are specified for the Baldwin reservoir, Cleveland, for which bids will be opened this week and the 1700 tons required may test the market. Hard steel bars range from 1.50c. to 1.60c. Light rails are still irregular with 1.60c. and 1.65c. as the ruling quotations. In structural work, bids have been taken for the Chester Gardens apartment building, Cleveland, for which the steel requirements will probably be 2500 tons. Bids have also been taken for the Junior High School, Canton, requiring 550 tons and for the Oberlin High School, requiring 200 tons.

Jobbers quote steel bars, 2.64c.; plates and structural shapes, 2.74c.; No. 9 galvanized wire, 3.50c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 3.75c.; No. 28 galvanized sheets, 4.75c.; No. 10 blue annealed sheets, 3.10c.; hoops and bands, 3.29c.; cold-rolled rounds, 3.85c.; flats, squares and hexagons, 4.35c.

Old Material.—The falling off in the activity noted last week continues. Shipments of scrap in some cases have been made faster than wanted, and two mills, one in the Youngstown and the other in the Pittsburgh district, held up shipments during the week. Prices are firm. We note the sale of 1000 tons of bolt and nut scrap by a Cleveland producer at $12.50. Small lot sales of machine shop turnings at $11 and compressed steel scrap at $12.50 delivered at consumers' plants are reported. A small lot sale of machine shop turnings has been made to a dealer at $7.50, which is above the ruling quotation on this grade. One Pittsburgh district mill is in the market for heavy melting steel at $14.50.

We quote per gross ton, f.o.b. Cleveland, as follows:

Heavy melting steel	$12.00 to $12.50
Steel rails, under 3 ft	12.75 to 13.25
Steel rails, rerolling	15.00 to 15.50
Iron rails	11.00 to 12.00
Iron car axles	18.00 to 19.00
Low phosphorous melting scrap	12.50 to 13.00
Cast borings	8.65 to 8.85
Machine shop turnings	6.60 to 7.00
Mixed borings and short turnings	7.00 to 7.50
Compressed steel	9.50 to 9.75
Railroad wrought	12.00 to 12.50
Railroad malleable	12.00 to 12.75
Light bundled sheet stampings	6.25 to 6.60
Steel axle turnings	9.25 to 9.75
No. 1 cast	16.00 to 16.50
No. 1 busheling	8.25 to 8.75
Drop forge flashings, over 10 in	8.00 to 8.50
Drop forge flashings, under 10 in	8.00 to 8.50
Railroad grate bars	12.75 to 13.00
Stove plate	13.00 to 13.25
Pipes and flues	8.50 to 9.00

New Swedish Prices

STOCKHOLM, SWEDEN, Oct. 14.—The Sweedish Iron Federation has revised current prices. Converted into dollars at a rate of exchange of 4.54 and per ton of 1016 kg., quotations f.o.b. Swedish port, are as follows:

Export pig iron	$38.04
Billets	$95.11 to 117.49
Wire rods	106.30 to 128.68
Open-hearth steel	55.95 to 63.78
Lancashire iron	72.73

The Rosenberg Iron & Metal Co., San Francisco, won in its suit against the Santa Fe Railroad in regard to freight rates on scrap charged by the railroad on old rails, car wheels and grate bars. The railroad first charged $1,352, reducing this to $850. The Rosenberg company paid $400, based on the scrap iron rate. The decision of the Superior Court of San Francisco favored the scrap firm. The case was based on the question of whether the material was usable in present form or was to be remelted as scrap.

The management of the Canonsburg Steel & Iron Works, Canonsburg, Pa., recently reached an agreement with its workmen and on Oct. 17 the plant started up at about 50 per cent of capacity. The company recognizes the Amalgamated Association of Iron, Steel and Tin Workers in the hot mills, but the remainder of the plant is on an open-shop basis, with unskilled labor on a basis of 30c. an hour.

British Iron and Steel Market

Finished Steel Lower in Price—Billets Have Advanced—Tin Plate Market Steady and Galvanized Sheets Firm

(By Cable)

LONDON, ENGLAND, Nov. 1.

Cleveland producers are cutting prices on low grade pig iron, to clear stocks. Otherwise, the position is unchanged. Hematite is weak. Bilbao Rubio is quoted at 27s. ($5.29) ex-ship Tees.

Steel export quotations are lower. Beams and sections are being sold at £9 5s. (1.62c. per lb.) f.o.b., less 1¼ per cent. Crown iron bars are held at £14 (2.45c. per lb.) net f.o.b. for immediate shipment.

The engineers (metal workers) are accepting the withdrawal of war bonuses. The Clyde shipbuilding output during October was fifteen vessels, aggregating 64,099 gross tons register.

Cheap German prices for sections are £7 17½s. (1.38c. per lb.); for plates £7 12½s. (1.33½c. per lb.); for wire rods £8 15s. (1.53c. per lb.); all f.o.b., with shipment in six to eight weeks. Belgian merchant bars are now sold at £8 2½s. (1.42c. per lb.) f.o.b.

Tin plates are steady. Buying option contracts for November, December and January are quoted up to 21½s. ($4.21) basis f.o.b. The order obtained last week by Welsh makers for British Columbia, of 150,000 boxes of odd size tin plates, reported at $4.90 delivered, has caused a disinclination on the part of the makers to enter into forward contracts.

The Far East is still purchasing light weights and wasters, and some merchants have been caught short. Demand for galvanized sheets has slackened, but the price is firm at £18 (3.15c. per lb.) f.o.b. for No. 24 gage.

We quote per gross ton, except where otherwise stated, f.o.b. maker's works, with American equivalent figured at $3.92 per £1 as follows:

Durham coke, delivered	£1 10		$5.88
Cleveland basic	7	7½ & £7 10*	28.91 & $29.40
Cleveland No. 1 foundry	7 0		27.44
Cleveland No. 3 foundry	6 0		23.52
Cleveland No. 4 foundry	5 14		22.34
Cleveland No. 4 forge	5 5		20.58
Hematite	7 0*		27.44
East Coast mixed	6 0 &	6 2½*	23.52 & 24.01
Ferromanganese	15 0 &	14 10*	58.80 & 56.84
Rails, 60 lb. and up	9 10 to	10 10	37.24 to 41.16
Billets	7 5 to	8 10	28.42 to 33.32
Sheet and tin plate bars, Welsh	7 0 to	8 5	27.44 to 32.34
Tin plate base box	1 1¼ to	1 2½	4.17 to 4.41
			C. per Lb.
Ship plates	10 10		1.84
Boiler plates	15 0 to	16 0	2.63 to 2.80
Tees	10 15 to	11 10	1.88 to 2.01
Channels	10 0 to	10 15	1.75 to 1.88
Beams	10 0 to	10 10	1.75 to 1.84
Round bars, ¾ to 3 in.	11 10 to	12 0	2.01 to 2.10
Galvanized sheets, 24 g.	18 0 to	18 10	3.15 to 3.24
Black sheets	15 0 to	16 0	2.63 to 2.80
Steel hoops	14 5 &	14 0*	2.49 & 2.45
Cold rolled steel strip, 20 g.	24 10		4.29

*Export price.

The Allen-Sherman-Hoff Co., Philadelphia, has been organized under the laws of Pennsylvania for designing, manufacturing and selling "A-S-H" hoppers of unit standardized cast-iron construction and "A-S-H" gates, both piston and hand operated, of all sizes. The personnel of the company consists of M. G. Sherman of the Sherman Engineering Co., president; L. P. Hoff, formerly of the Baker-Dunbar-Allen Sales Co., Cleveland, vice-president and chief engineer; F. B. Allen, also formerly of the Baker-Dunbar-Allen Sales Co., secretary and treasurer. General offices of the company are at 510 Stock Exchange Building, Philadelphia.

The Republic Iron & Steel Co. is operating four of its eight new sheet mills at its Niles plant, and is preparing the remaining four new mills for production as business warrants.

METRIC SYSTEM

Its Use Not as Extensive as Generally Supposed — Valuable Report

The question involved in the proposed metric system bill legislation to make the use of the system compulsory is an important one, not only to the manufacturer and business man, but to every citizen of the country, says a report by the National Industrial Conference Board which shows the intimate and far-reaching relation of this legislation to the public and to all fields of industry and trade. A report issued by the board entitled "The Metric versus the English System of Weights and Measures," is a comprehensive study of the metric question in all its aspects and should afford timely assistance to manufacturers, officials and all students of the question in determining their attitude on this controversial subject.

All the information presented in the report is of an authoritative nature, most of it having been gathered from first-hand sources. The weights and measures situation in every country of the world is reviewed, as well as the relation of the English and metric systems to specialized fields.

The report indicates that the metric system is in predominant use in 37 countries, with a population of 395,521,000, that the English system is in predominant use in 12 countries, with a population of 343,557,000, and that 28 countries, with a population of 823,700,000 do not use either the English or metric system predominantly. It also points out that in 1919 English countries exported 48.2 per cent of the world's total exports, that metric countries exported 37.5 per cent, and other countries, 14.3 per cent. The use of the metric system the world over, the reports says, is not so widespread as is frequently supposed, and the use of the English standards is quite as common and generally increasing.

The report analyzes such specialized fields as science and engineering, agriculture, mining, transportation and trade, manufacture, and foreign trade.

Pittsburgh Iron and Steel Market

(Continued from page 1171)

that company sold at $8.35, Detroit, equal to $13.25, Pittsburgh. Offerings of compressed sheets for November shipment for the Westinghouse Electric & Mfg. Co. are reported to have sold at $12 East Pittsburgh, turnings at $9.50 and borings at $10.50. The Baltimore & Ohio Railroad will receive bids until Nov. 7, on 21 carloads and 10,125 gross tons of scrap, and 3000 lb. of high-speed steel. Bids will close to-day on about 26,000 tons of old material offered by Pennsylvania Railroad, eastern region.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate, as follows:

Heavy melting steel, Steubenville, Follansbee, Brackenridge, Monessen, Midland and Pittsburgh	$14.50 to $15.00
No. 1 cast cupola size	17.50 to 18.00
Rerolling rails, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	16.00 to 16.50
Compressed sheet steel	12.50 to 13.00
Bundled sheet sides and ends, f.o.b. consumers' mills, Pittsburgh dist.	11.00 to 11.50
Railroad knuckles and couplers	15.50 to 16.00
Railroad coil and leaf springs	15.50 to 16.00
Low phosphorus standard bloom and billet ends	20.00 to 21.00
Low phosphorus plates and other grades	17.50 to 18.50
Railroad malleable	13.50 to 14.00
Iron car axles	25.00 to 26.00
Locomotive axles, steel	23.00 to 24.00
Steel car axles	16.50 to 17.00
Cast iron wheels	16.50 to 17.00
Rolled steel wheels	15.50 to 16.00
Machine shop turnings	10.00 to 10.50
Sheet bar crop ends	14.50 to 15.00
Heavy steel axle turnings	12.50 to 13.00
Short shoveling turnings	11.50 to 12.00
Heavy breakable cast	15.50 to 16.00
Stove plate	13.00 to 13.50
Cast iron borings	10.50 to 11.00
No. 1 railroad wrought	12.00 to 12.50

Prices Finished Iron and Steel, f.o.b. Pittsburgh

Freight Rates

Freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic	$0.35	Kansas City	$0.815
Philadelphia, export	0.265	Kansas City (pipe)	0.77
Baltimore, domestic	0.335	St. Paul	0.665
Baltimore, export	0.255	Omaha	0.815
New York, domestic	0.38	Omaha (pipe)	0.77
New York, export	0.285	Denver	1.35
Boston, domestic	0.415	Denver (wire products)	1.415
Boston, export	0.285	Pacific Coast	1.665
Buffalo	0.295	Pacific Coast, ship plates	1.335
Cleveland	0.24	Birmingham	0.765
Detroit	0.325	Jacksonville, all rail	0.555
Cincinnati	0.325	Jacksonville, rail and water	0.46
Indianapolis	0.345	New Orleans	0.515
Chicago	0.38		
St. Louis	0.475		

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver, the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 55c.; ship plates, 75c.; ingot and muck bars, structural steel, common wire products, including cut or wire nails, spikes and wire hoops, 75c.; sheets and tin plates, 60c. to 75c.; rods, wire rope, cable and strands, $1; wire fencing, netting and stretcher, 75c.; pipe, not over 8 in. in diameter, 75c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Structural Material

I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs, ¼ in. thick and over, and zees, structural sizes, 1.50c. to 1.65c.

Sheared plates, ¼ in. and heavier, tank quality, 1.50c. to 1.65c.

Wire Products

Wire nails, $2.90 base per keg; galvanized, 1 in. and longer, including large-head barbed roofing nails, taking an advance over this price of $1.25 and shorter than 1 in., $1.75; bright Bessemer and basic wire, $2.60 per 100 lb.; annealed fence wire, Nos. 6 to 9, $2.60; galvanized wire, $3.10; galvanized barbed wire, $3.55; galvanized fence staples, $3.55; painted barbed wire, $3.05; polished fence staples, $3.05; cement-coated nails, per count keg, $2.45; these prices being subject to the usual advances for the smaller trade, all f.o.b. Pittsburgh, freight added to point of delivery, terms 60 days, net, less 2 per cent off for cash in 10 days. Discounts on woven-wire fencing are 68 to 70½ per cent off list for carload lots, 67 to 69½ per cent for 1000-rod lots, and 66 to 68½ per cent for small lots, f.o.b. Pittsburgh.

Bolts, Nuts and Rivets

Large structural and ship rivets.....$2.25 to $2.40 base
Large boiler rivets.....2.35 to 2.50 base
Small rivets .....70, 10 and 5 to 70, 10 and 7½ per cent off list
Machine bolts, small, rolled threads, 70, 10 and 5 per cent off list
Machine bolts, small, cut threads....70 and 5 per cent off list
Machine bolts, larger and longer..65, 10 and 5 per cent off list
Carriage bolts, ¾ in. x 6 in.:
Smaller and shorter rolled threads, 65, 10 and 10 per cent off list
Cut threads .....65 and 10 per cent off list
Longer and larger sizes.....65 and 10 per cent off list
Lag bolts .....70 and 10 to 70, 10 and 5 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....60 and 10 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ in. x 4 in.:
Smaller and shorter.....65 and 5 per cent off list
Larger and longer sizes.....65 per cent off list
Hot pressed sq. or hex. blank nuts.....$5.50 off list
Hot pressed nuts, tapped.....$5.00 off list
C.p.c. and t. sq. or hex. blank nuts.....$5.25 off list
C.p.c. and t. sq. or hex. blank nuts, tapped.....$5.00 off list
Semi-finished hex. nuts:
¼ in. to 9/16 in. inclusive.....80, 10 and 10 per cent off list
Small sizes S. A. E.....80, 10, 10 and 10 per cent off list
⅝ in. to 1 in. inclusive, U. S. S. and S. A. E., 70, 10, 10 and 10 per cent off list
Stove bolts in packages.....80, 10 and 5 per cent off list
Stove bolts in bulk.....80, 10 and 7½ per cent off list
Tire bolts .....65, 10 and 10 per cent off list
Track bolts, carloads.....3.25c. to 3.50c. base
Track bolts, less than carloads.....4.25c. to 4.50c.

Upset Square and Hex. Head Cap Screws

½ in. and under.....75 and 10 to 80 and 10 per cent off list
9/16 in. to ¾ in.....75 and 10 to 80 and 10 per cent off list

Upset Set Screws

½ in. and under.....80, 10 and 5 to 85 per cent off list
9/16 in. to ¾ in.....80, 10 and 5 to 85 per cent off list

Milled Square and Hex. Cap Screws

All sizes .....70 and 10 per cent off list

Milled Set Screws

All sizes .....70, 10 and 5 per cent off list

Rivets

Rivets, 1c. per lb. extra for less than 200 kegs. Rivets in 100-lb. kegs, 25c. extra to buyers not under contract; small and miscellaneous lots less than two tons, 25c. extra; less than 100 lb. of a size or broken kegs, 50c. extra.

All prices carry standard extras f.o.b. Pittsburgh.

Wire Rods

No. 5 common basic or Bessemer rods to domestic consumers, $40 to $41; chain rods, $40 to $41; screw stock rods, $45 to $46; rivet and bolt rods and other rods of that character, $40 to $41; high carbon rods, $48 to $53, depending on carbons.

Railroad Spikes and Track Bolts

Railroad spikes, 9/16-in. and larger, $2.25 to $2.30 base per 100 lb. in lots of 200 kegs of 200 lb. each or more; spikes, ½-in., ⅜-in. and 7/16-in., $2.50 base; 5/16-in., $2.50 base. Boat and barge spikes, $2.50 base per 100 lb. in carload lots of 200 kegs or more, f.o.b. Pittsburgh. Track bolts, $3.25 to $3.50 base per 100 lb. Tie plates, $2 per 100 lb.

Terne Plates

Prices of terne plates are as follows: 8-lb. coating, 200 lb., $10.30 per package; 8-lb. coating, I. C., $10.60; 15-lb. coating, I. C., $13.30; 20-lb. coating, I. C., $14.55; 25-lb. coating, I. C., $15.80; 30-lb. coating, I. C., $16.80; 35-lb. coating, I. C., $17.80; 40-lb. coating, I. C., $18.80 per package, all f.o.b. Pittsburgh, freight added to point of delivery.

Iron and Steel Bars

Steel bars, 1.50c. to 1.65c. from mill. Refined bar iron, 2.15c. to 2.25c.

Welded Pipe

The following discounts are to jobbers for carload lots on the Pittsburgh basing card:

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛	54½	28	¼ to ⅜	+3½	+22½
¼ to ⅜	57½	31	½	36½	18½
½	62½	48	¾	42½	27½
¾	66½	54	1 to 1½	44½	29½
1 to 3	68½	56			

Lap Weld

2	61½	49	2	39½	25½
2½ to 6	65½	53	2½ to 6	42½	29½
7 to 8	62½	49	7 to 12	40½	27½
9 to 12	61½	48			

Butt Weld, extra strong, plain ends

⅛	50½	33	¼ to ⅜	+4½	+37½
¼ to ⅜	53½	35	½	35½	23½
½	59½	48	¾	42½	28½
¾	64½	53	1 to 1½	44½	30½
1 to 1½	66½	55			
2 to 3	68½	56			

Lap Weld, extra strong, plain ends

2	59½	48	2	40½	27½
2½ to 4	63½	52	2½ to 4	43½	31½
4½ to 6	62½	51	4½ to 6	42½	30½
7 to 8	58½	45	7 to 8	35½	23½
9 to 12	52½	39	9 to 12	30½	18½

To the large jobbing trade the above discounts are increased by one point, with extra discounts of 5 and 2½ per cent.

Boiler Tubes

The following are the discounts for carload lots f.o.b. Pittsburgh:

Lap Welded Steel		*Charcoal Iron*	
1¾ in.	26½	1½ in.	5
2 to 2¼ in.	41	1¾ to 1⅞ in.	15
2½ to 3 in.	52	2 to 2¼ in.	25
3¼ to 13 in.	57	2½ to 3 in.	30
		3¼ to 4½ in.	32

Standard Commercial Seamless Boiler Tubes

New discounts have been adopted on standard commercial seamless boiler tubes, but manufacturers are not yet ready to announce them for publication, and for that reason we publish no discounts this week.

Sheets

Prices for mill shipments on sheets of standard gage in carloads, f.o.b. Pittsburgh, follow:

Blue Annealed

Cents per Lb.		Cents per Lb.	
No. 8 and heavier	2.20–2.45	Nos. 11 and 12	2.30–2.55
Nos. 9 and 10 (base)	2.25–2.50	Nos. 13 and 14	2.35–2.60
		Nos. 15 and 16	2.45–2.70

Box Annealed, One Pass Cold Rolled

Cents per Lb.		Cents per Lb.	
Nos. 17 to 21	2.80	No. 28 (base)	3.00
Nos. 22 to 24	2.85	No. 29	3.10
Nos. 25 and 26	2.90	No. 30	3.20
No. 27	2.95		

Galvanized

Cents per Lb.		Cents per Lb.	
Nos. 10 and 11	3.00	Nos. 25 and 26	3.70
Nos. 12 to 14	3.10	No. 27	3.85
Nos. 15 and 16	3.25	No. 28 (base)	4.00
Nos. 17 to 21	3.40	No. 29	4.25
Nos. 22 to 24	3.55	No. 30	4.50

Tin-Mill Black Plate

Cents per Lb.		Cents per Lb.	
Nos. 15 and 16	2.80	No. 28 (base)	3.00
Nos. 17 to 21	2.85	No. 29	3.05
Nos. 22 to 24	2.90	No. 30	3.05
Nos. 25 to 27	2.95	Nos. 30½ and 31	3.10

NON-FERROUS METALS

The Week's Prices

Cents Per Pound for Early Delivery

	Copper, New York		Tin	Lead		Zinc	
Oct.	Lake	Electrolytic	New York	New York	St. Louis	New York	St. Louis
26.....	13.00	12.62½	28.25	4.70	4.40	5.10	4.60
27.....	13.00	12.62½	28.00	4.70	4.40	5.10	4.60
28.....	13.00	12.62½	28.00	4.70	4.40	5.05	4.55
29.....	13.12½	12.75	....	4.70	4.40	5.05	4.55
31.....	13.12½	12.75	28.25	4.70	4.40	5.05	4.55
Nov. 1.....	13.12½	12.75	28.00	4.70	4.40	5.05	4.55

New York

NEW YORK, Nov. 1.

The tone of most of the markets is strong and prices in most cases are steady. Inquiries and sales of copper have increased. Demand for lead and tin is steady but moderate. The zinc market is quieter and easier.

Copper.—Since toward the close of last week the electrolytic market has grown stronger until the minimum price for November or November-December delivery is now firm at 13c., delivered, or 12.75c., New York. The metal available at about ⅛c. under these prices last week has evidently been absorbed. One large seller reports domestic sales of substantial quantities in the last few days at 13c., delivered, with some spot delivery at 13.12½c. Inquiries are also larger than in some time. The tone of the market is decidedly optimistic. Deliveries into consumption in October are estimated to have been at least 60,000,000 lb. but export sales for that month are reported to have been less than in September.

Copper Averages.—The average price of Lake copper for the month of October, based on daily quotations in THE IRON AGE, was 12.95c. The average price of electrolytic copper was 12.67c.

Tin.—The removal of the possibility of a railroad strike has caused the market to become quiet with only light sales reported. Consumers removed considerable Straits tin from warehouses when the strike was threatened so that in the last few days there has been very little demand for spot delivery. Strength in sterling exchange has helped to maintain prices at close to 28c., New York, for spot Straits, the quotation to-day having been 28.00c., New York. The London market to-day was about £1 per ton lower than a week ago on all positions with spot standard quoted at £155 10s., future standard at £157 15s. and spot Straits at £156. Total deliveries into consumption for October are returned at 2280 tons with stocks at 1391 tons and metal landing at 650 tons.

Lead.—The market is very quiet with a moderate amount of business reported. Prices are unchanged and firm at 4.70c., New York, or 4.40c., St. Louis, for the outside market with the leading interest still maintaining its quotations at 4.70c., New York and St. Louis.

Zinc.—Because of a lull in demand from galvanizers, buying has declined and prices are a little lower with prime Western for early delivery quoted at 4.55c. to 4.60c., St. Louis, or 5.05c. to 5.10c., New York. The quiet market is due largely to the fact that consumers covered their early future needs in anticipation of a tie-up in transportation. Prospects are good for future demand from the same source. Producers are not pressing the market and very few will quote as low as 4.60c., St. Louis. The present demand is largely being satisfied by second hands.

Antimony.—The market is dull and lower at 4.75c., New York, duty paid, for wholesale lots for early or November delivery.

Aluminum.—Sales are reported of large quantities of aluminum but this is unconfirmed. It is stated that the leading interest is ready or has met any prices offered by importers. Virgin metal, 98 to 99 per cent pure, is quoted at 24.50c. f.o.b. plant, by the leading producer with importers offering at 17c. to 18c., New York, duty paid.

Old Metals.—The outlook appears to be brighter though actual business is still quiet. Dealers' selling prices are nominally as follows:

	Cents Per Lb.
Copper, heavy and crucible	$12.25
Copper, heavy and wire	11.25
Copper, light and bottoms	9.50
Heavy machine composition	9.50
Brass, heavy	7.00
Brass, light	5.50
No. 1 red brass or composition turnings	7.75
No. 1 yellow rod brass turnings	5.75
Lead, heavy	4.25
Lead, tea	3.25
Zinc	3.00

Chicago

Nov. 1.—Inquiry has been fair, but sales last week were confined largely to spot orders placed on account of the threatened railroad strike. Copper and tin have advanced and zinc has declined. Old metal prices are unchanged. We quote in carload lots: Lake copper, 13.25c. to 13.50c.; tin, 29.50c. to 30c.; lead, 4.50c.; spelter, 4.65c.; antimony, 7c., in less than carload lots. On old metals we quote: Copper wire, crucible shapes and copper clips, 8.50c.; copper bottoms, 7c.; red brass, 7c.; yellow brass, 5c.; lead pipe, 3c.; zinc, 2.25c.; pewter, No. 1, 17c.; tin foil, 18c.; block tin, 20c.; all buying prices for less than carload lots.

St. Louis

Nov. 1.—Both lead and zinc are unchanged. We quote lead at 4.47½c. to 4.50c., car lots, and slab zinc, 4.67½c. to 4.70c. We quote Lake Copper at 13.73½c., car lots; tin, 28.86c., and antimony, 5.48½c. In old metals, we quote: Light brass, 3.50c.; heavy red brass, 7c.; light copper, 7c.; heavy yellow brass, 4c.; heavy copper and copper wire, 7.50c.; zinc., 2c.; pewter, 15c.; tinfoil, 16c.; tea lead, 2c.; aluminum, 9c.

Youngstown-Inland-Steel & Tube Merger

YOUNGSTOWN, OHIO, Nov. 1.—Though still lacking full confirmation, it appears that negotiations have been brought to a successful conclusion for the merger of the Youngstown Sheet & Tube Co., the Inland Steel Co. of Chicago and the Steel & Tube Co. of America, also of Chicago. Meetings of representatives of other large independents have been held recently to discuss the proposal to join the amalgamation. Partial confirmation of the consolidation of the three companies first mentioned is afforded by Youngstown banking interests, but the financial developments are understood to be in the hands of Kuhn, Loeb & Co., New York. It is believed here that President James A. Campbell, Youngstown Sheet and Tube Co., will be the active head.

Throughout the negotiations for the merger various steel interests have pointed out that the independents could not afford to continue to compete against each other, in face of the advantages enjoyed by the Steel Corporation. The fact that the independent makers have likewise been forced to accept tonnage below actual operating cost in the competitive market has been another impetus toward effecting a closer mutuality of interest. In short, the present conditions of low demand, high operating costs and disadvantageous location of plants in relation to the Steel Corporation in the matter of freight charges are factors which encourage active negotiation for mergers. The present action indicates the operations of a new group, but it is safe to say that it will be some months before details can be settled. It may be mentioned that the three interests named are fully integrated from raw materials to finished product.

PERSONAL

Walter C. Carroll, for the past 13 years assistant general manager of sales, American Sheet & Tin Plate Co., Pittsburgh, has resigned to become vice-president and general manager of sheet sales of the Inland Steel Co., Chicago. Mr. Carroll takes with him to his new position a very complete knowledge of the steel business, particularly of steel sheets, acquired over the 19 years he has been affiliated with the American Sheet Steel Co. and its successor, the American Sheet & Tin Plate Co. He was born in Baltimore in 1876. After attending the elementary public schools and the University School in that city, he entered Princeton University and was graduated in 1900 with the degree Bachelor of Science. He entered Harvard Law School in the fall of 1900 and in 1901 and 1902 divided his work between post-graduate studies and the law school. The opportunity of entering the steel business came in March, 1902, as the result of an introduction to George G. McMurtry, then president of the American Sheet Steel Co. Mr. Carroll was assigned to the Vandergrift, Pa., works of that company, the model steel works located in the model steel town of that time. After becoming thoroughly acquainted with the manufacture of sheets, in January, 1903, he was appointed district sales agent of the company at Detroit, succeeding F. A. Goodrich & Co., which up to that time had represented the American Sheet Steel Co. In January, 1904, with the consolidation of the American Sheet Steel Co. and American Tin Plate Co., Mr. Carroll was transferred to San Francisco, where the offices of the two companies were consolidated, and served there a little more than two years as assistant to the manager of sales. He then was transferred to St. Louis, remaining there until January, 1909, when he was appointed assistant general manager of sales at the general offices in Pittsburgh. Shortly after going to Pittsburgh, Mr. Carroll took a course in metallography at the University of Pittsburgh, and has specialized on the metallurgical problems of the sales department. During the war he was a member of the subcommittee on sheet steel of the American Iron and Steel Institute, working in conjunction with the War Industries Board. Mr. Carroll will join the Inland staff on Nov. 10.

WALTER C. CARROLL

Robert S. Maddocks, formerly in the New York sales department of the Midvale Steel & Ordnance Co., is now with the New York sales office of the Central Iron & Steel Co., Harrisburg, Pa.

C. H. Hobbs, for over 14 years with the Lackawanna Steel Co., has been appointed assistant general manager of sales of the Detroit Seamless Steel Tubes Co., Detroit, a newly created position.

Robert I. Miner has been appointed sales engineer for the pressed steel division of the Motor Wheel Corporation, Lansing, Mich.

Abner U. Howard has been appointed sales manager for N. & G. Taylor Co., Inc., Philadelphia. He was for a number of years connected with the National Conduit & Cable Co.

A. C. Evans, 18 South Seventh Street, Philadelphia, is now an agent in the Philadelphia district for the Edgar Allen Steel Co., Inc.

Theodore Wagner, New Britain, Conn., has been made general superintendent of John D. Crosby Co., Pawtucket, R. I. For 37 years he was a foreman at the Stanley Works, resigning four years ago to accept a position with the Worcester Pressed Steel Co., Milford, Conn.

B. S. Livingston, for the past five years manager of Eastern sales of Viele, Blackwell & Buck, 49 Wall Street, New York, exporters and consulting engineers, recently resigned to become manager of the Far Eastern department of Foreign Traders, Inc., 154 Nassau Street, New York. Foreign Traders, Inc., was organized in 1917 to deal with importers only in all foreign markets, handling iron and steel, machinery, chemicals, etc.

P. C. Sprague has been appointed manager of the traffic department of M. A. Hanna & Co., Cleveland, effective Nov. 15, filling a vacancy caused by the recent death of O. E. Anthony. Mr. Sprague is at present general freight agent of the Southwestern division of the Pennsylvania Railroad at St. Louis.

William Whistler Mills, for five years assistant chief chemist of the Pittsburgh Crucible Steel Co. at its Midland, Pa., works, has been added to the faculty of the College of Wooster, Wooster, Ohio, as instructor in chemistry.

W. E. Kelly, Western representative Central Railway Signal Co., Pittsburgh, has also been appointed representative of the Handlan-Buck Mfg. Co., St. Louis, for Chicago and adjacent territory, with headquarters in the McCormick Building, Chicago.

H. E. Witham, who has been connected with the Warner & Swasey Co., Cleveland, for more than 20 years and who is at present district sales manager for the Chicago territory, has resigned on account of the health of his family, and is being succeeded in Chicago by C. E. Neubert, at present district manager for the Buffalo office of the Warner & Swasey Co. Mr. Neubert was assistant district manager of the Chicago territory for ten years. Mr. Neubert is being succeeded as Buffalo district sales manager by Gerald Kochenderfer, who has been the district representative at the Indianapolis office.

James A. Slater, manager of sales National Malleable Castings Co., Chicago, has been appointed assistant sales manager, with headquarters at the company's general offices at Cleveland, succeeding J. H. Redhead, resigned, to become manager the Reliance Co., Cleveland.

Walter E. Heibel, who for the past two years has been Eastern district manager of the Willmarth & Morman Co., has resigned to accept a position with the B. F. Sturtevant Co., Boston. He will be located at 52 Vanderbilt Avenue, New York.

Edward E. Book has been appointed welfare director of the Youngstown Steel Car Co., Niles, Ohio. For several years he was in the employ of the Pittsburgh & Lake Erie railroad at McKees Rocks, Pa.

A. Clarke Moore, formerly assistant to the president Globe Seamless Tube Co., has been appointed vice-president of the Chicago Railway Equipment Co., Chicago, succeeding the late C. Haines Williams, deceased. He will have general supervision of the manufacturing and selling departments.

Charles L. Anderson, Ann Arbor, Mich., has been added to the directorate of the Hoover Steel Ball Co., Ann Arbor. The other directors were re-elected.

John F. Miller, vice-president Westinghouse Air Brake Co., Pittsburgh, has been elected an alumni trustee of the College of Wooster, Wooster, Ohio.

Charles W. Brainard, secretary-treasurer Union Steam Pump Co., Battle Creek, Mich., has been elected president of the company. Theodore Hattendorf was elected secretary and assistant treasurer. Mr. Brainard will serve as treasurer, as well as president. William J. Smith, president Old National Bank, Battle Creek, and W. D. Baker, president Battle Creek Lumber Co., were elected to fill vacancies in the board of directors.

Leonard W. Kearns has affiliated with the sales organization of the Chicago Belting Co., Chicago. He has been active in the leather belting business for 22 years, 18 of which have been in the service of one company. He has been branch manager at Atlanta, Ga.; Charlotte, N. C., and Chicago, and has sold belting throughout the United States and Cuba.

F. N. Vawter, of the Baker-Vawter Co., Benton Harbor, Mich., manufacturer of metal office equipment, has gone to Toronto, Ont., where he will engage in the manufacture of stationery.

F. E. Badger has been promoted to sales manager of the chassis spring division of the Detroit Steel Products Co., Detroit. For the last ten months he was a member of the sales engineering staff and for eight years previously he was plant manager of the Standard Parts Co., Flint, Mich.

James T. Sullivan, for many years treasurer of the Port Huron Engine & Thresher Co., Port Huron, Mich., has resigned and entered the commercial security business, becoming Michigan representative of the Wendorff-Hess Co., Cleveland, with temporary offices at Port Huron.

D. McCall White, vice-president and chief designing engineer of the Lafayette Motors Co., Indianapolis, has resigned and will soon make a connection with one of the largest automobile companies. Mr. White was formerly chief engineer of the Cadillac Motor Car Co., Detroit.

Max Meltzer joined the Continental Iron & Steel Co., 2 Rector Street, New York, iron and steel scrap, on Nov. 1. He has had several years' experience with scrap brokers in New York and elsewhere.

F. R. Wadleigh, New York, has been appointed to take charge of the coal section of the recently created Fuel Division of the Bureau of Foreign and Domestic Commerce. He has had wide experience in the coal industry, and has investigated problems connected with the production and sale of coal in the United States and foreign countries and has prepared numerous reports on the subject.

Elmer E. Yake has been made works manager of the Gilbert & Barker Mfg. Co., Springfield, Mass., tanks, pumps, etc. In 1904 he began work for the Pennsylvania Steel Co., studying the operation of steel production and having direct charge of employees. In November, 1915, he joined the Gilbert & Barker Mfg. Co., and in April, 1920, associated with the Walworth Mfg. Co., Boston and Kewanee, Ill., wrenches, etc. Then he became eastern manager of C. & G. Cooper Co., New York, steam and gas engines.

Stanton Griffith has just been appointed foundry superintendent of the Gilbert & Barker Mfg. Co., Springfield, Mass., pumps, tanks, etc. His foundry experience has been gained with O. A. & W. T. Thayer, Charlestown, Va.; the Union Works, San Francisco; the Risdon Iron Works, San Francisco; Frazier & Chalmers and the Link Belt Machinery Co., both of Chicago; E. P. Ellis, Milwaukee; Goulds Mfg. Co., Seneca Falls, N. Y.; Taylor & Co., Brooklyn; R. Howe & Co., New York; Fairbanks, Morse & Co., Chicago; Malley Printing Press, and Greenby Brothers, both of Chicago, and the Harley Co., Springfield, Mass.

G. A. Trube sailed for France on the Aquitania on Oct. 27 to join the Paris office of the Equitable Trust Co. at 25 rue de la Paix, where he will have work in relation to industrial companies in France.

George K. Vail, general manager Arthur G. McKee & Co., engineers, Cleveland, has been elected vice-president of the Ohio Steel Foundry Co., Lima, Ohio, and will leave the McKee firm to become affiliated with the Lima company Nov. 15. Previous to joining McKee & Co., Mr. Vail was associated for some time with the Westinghouse Electric & Mfg. Co., first as a salesman in its Cleveland office and later as district sales manager.

J. W. Dickson, who since leaving E. W. Mudge & Co., Pittsburgh, with whom he was associated for many years, has been vice-president of Park & Williams, pig iron, Philadelphia, in charge of this firm's Pittsburgh office, has resigned to enter business for himself.

C. C. Boyden, until recently with the sales department of the Alan Wood Iron & Steel Co., Philadelphia, and formerly with B. Nicoll & Co., New York, has gone to California for the winter.

OBITUARY

HENRY A. BASTIAN, secretary Egyptian Iron Works, Murphysboro, Ill., died on Oct. 8.

CHARLES E. KOLB, president Union Steam Pump Co., Battle Creek, Mich., died Oct. 13, at the age of 65.

HERON K. HIBBEN, secretary-treasurer Hibben & Co., boiler manufacturers, 9376 Ewing Street, South Chicago, died recently.

JOHN WITTMAN, president Atlas Brass Foundry Co., Columbus, Ohio, died at his home in that city recently from neuritis. He was born in Columbus 65 years ago.

GEORGE HENRY COATES, president and treasurer Coates Clipper Mfg. Co., Worcester, Mass., died at his home in that city Oct. 18. He was born in Windsor, Vt., June 23, 1849.

SUMNER O. BUSH, former vice-president and general manager Advance Threshing Machine Co., Battle Creek, Mich., died Oct. 20, in his home in that city of cancer at the age of 73.

FRED J. MEYERS, president Fred J. Meyers Co., Hamilton, Ohio, died at his home in that city recently. He was born in Cincinnati in 1845 and first engaged in business in Covington, Ky., later moving to Hamilton, Ohio.

DAVID J. JONES, for more than 40 years identified with the Cambria Iron Co., and its successor, the Cambria Steel Co., died at his home in Johnstown, Pa., Oct. 28. He was born in Wales, April 30, 1831, and came to the United States with his parents when a child. He entered the employ of the Cambria Iron Co., now known as the Cambria Steel Co., as a bookkeeper in 1870 and after two years was promoted to assistant treasurer, which position he held in 1914 when he retired.

T. W. ROBERTS, superintendent Radford plant, Lynchburg Foundry Co., Lynchburg, Va., died at his home in Radford, Va., Oct. 8, after two weeks' illness. He was born in Albemarle County, Va., July 13, 1847. He entered the old Dabney foundry as an apprentice at 14 years of age, but his apprenticeship was interrupted by his enlistment in the Civil War. Six months after the war ended, he went North where he stayed for about eight years and was connected with a number of foundries in New York and New Jersey as molder. He returned to his native state in 1873 and became connected with the Glamorgan Co., Lynchburg, and later with the Norfolk & Western Railway Co. at Roanoke, Va. Realizing that the cast iron pipe industry held large possibilities in the South, Mr. Roberts entered this line of work. He was one of the founders of the Lynchburg Foundry Co. He was the inventor of a number of improvements in the foundry industry in which he took a very keen interest up to the very last.

Approval of a storage-battery locomotive for use in gaseous mines has been issued by the United States Bureau of Mines to the Jeffrey Mfg. Co., Columbus, Ohio. The approval covers a 6-ton storage battery locomotive, which may be equipped with a battery consisting of either Edison cells or iron-clad exide cells. Caustic potash is specified as the electrolyte for use with the Edison battery. The first official approval of a storage battery locomotive was granted to the George D. Whitcomb Co. a few months ago. Two other locomotives, representing the product of two additional manufacturers, are now under test. The testing of storage battery locomotives for permissibility is in charge of L. C. Ilsley, electrical engineer of the Pittsburgh experiment station of the bureau.

The method for testing railroad and grain hopper scales used by the Bureau of Standards is described in Technologic Paper No. 199 of the Bureau of Standards, obtainable at 5 cents a copy from the superintendent of documents, Government Printing Office, Washington. The bulletin covers the method for making a precision test of large capacity scales.

IRON AND INDUSTRIAL STOCKS

Action of Prices Suggests Disappointment In the Labor Situation

While industrial shares have averaged higher the past week, the advance in quotations for them as well as for railroad securities suggests some disappointment over developments in the railroad labor situation by at least some investors. The market for United States Steel common rules strong, but prices for independent steel companies as a whole have been rather backward, on selling by holders on the showing of quarterly earnings statements. An improved demand for Youngstown Sheet & Tube Co. shares is noted presumably because of talk of that and other companies merging. Further reductions in prices for automobiles and trucks together with the large supply of used cars on the market have caused some selling of automotive securities since last reports. Public investment in securities appears to be on the increase, however, and with money comparatively free and cheap, and with improvement noted in various lines of business, the general trend of values for iron and industrial stocks has been upward.

The range of prices on active iron and industrial stocks from Monday of last week to Monday of this week was as follows:

Allis-Chalm. com.	33 - 34¼	Int. Har. com...	76⅞ - 79
Allis-Chalm. pf..	76 - 77	Int. Har. pf....	101 - —
Am. Can com...	25⅞ - 29½	Lack. Steel	39 - 42¾
Am. Can pf.....	85¼ - 86	Midvale Steel ...	23 - 26
Am. C. & F. com.	129 -131¼	Nat.-Acme	12¼ - 14
Am. Car. & F. pf.	110⅞ - —	Nat. E. & S. com.	39⅞ - 42⅛
Am. Loco. com..	90½ - 92¾	N. Y. Air Brake.	60 - —
Am. Rad. com...	70¾ - 76	Nova Scotia Steel	20¾ - 23¾
Am. Ship. com..	5½ - 6¾	Pitts. Steel pf...	81⅜ - 83½
Am. Stl. F. com.	23¾ - 25½	Press. Steel com.	56⅜ - 63½
Am. Stl. F. pf...	82¾ - 83	Ry. Stl. S. com..	83 - 85
Bald. Loco. com.	88⅛ - 91⅞	Replogle Steel ..	20 - 24¾
Bald. Loco. pf...	97 - 98	Republic com. ..	47¼ - 51⅛
Beth. Stl. Cl. B..	52½ - 57	Republic pf.	77½ - 80
Beth. Stl. 8% pf.	98⅜ -101	Sloss. com.	37¼ - 39⅜
Chic. Pneu Tool.	51 - 53	Superior Steel ..	30 - —
Colo. Fuel	23⅝ - 24¾	Un. Alloy Steel..	25 - 26
Cruc. Steel. com.	60¾ - 66¾	U. S. Steel com.	78⅛ - 81⅝
Cruc. Steel. pf...	83¾ - 84	U. S. Steel pf...	110 -110⅝
Gen. Elec.	128¾ -134	Vanadium Steel	30⅛ - 33⅜
Gt. No. Ore. Cert.	30½ - 31⅜	Va. I. C. & Coke	82 - 86
Gulf States Steel	37 - 39⅞	West'ghouse Elec.	45⅛ - 46

Industrial Finances

To conserve the existing assets of Pusey & Jones, Wilmington, Del., attorneys representing Christopher Hannevig, head of the company and who, it is alleged, owns all of the stock, have presented a proposition to interests represented in the litigation against the company, suggesting that all law suits be dropped and that a board of nine directors be appointed to operate the shipbuilding plants at Wilmington and Gloucester, N. J.

The Michigan Securities Commission has before it the petition of the American Transit Co. for permission to sell $4,500,000 bonds and $1,500,000 stock to finance construction of the Detroit-Windsor bridge across the Detroit River. The statement to the commission estimates the cost of the bridge at $15,000,000.

The H. A. May Foundry Co., Sixty-first and Eastwick streets, Philadelphia, has arranged for an increase in capital from $565,000 to $10,500,000.

The Columbia Tool & Machine Co., 733 North Fourth Street, Philadelphia, has been adjudicated bankrupt. Joseph Mellors is referee.

A petition in bankruptcy has been filed against the American Shipbuilding Co., 110 West Fortieth Street, New York. It is stated that the liabilities total $500,000, and assets about $600,000.

A petition in bankruptcy has been filed against the Day Steel Products Co., Chicago.

The Central Steel Co., Massillon, Ohio, is putting out a bond issue of $5,000,000 in 24-year first mortgage 8 per cent gold bonds, which have been sold to a syndicate of Cleveland and New York bankers and are being offered at 98½. The issue will be secured by a first mortgage on the company's plant, appraised at over $16,000,000. A sinking fund will be provided to be used to purchase up to a price of $107.50, 5 per cent of the issue yearly for the 8-year period from July 1, 1923, until July 1, 1931. After the latter date the sinking fund will be sufficient to purchase 10 per cent yearly of the amount of bonds outstanding Oct. 31, 1931. The proceeds of the bonds will be used for working capital and to pay off $3,500,000 current indebtedness.

Pressed Steel Car Co. has declared the regular quarterly dividend of 1¾ per cent on the preferred stock, payable Nov. 30.

Pittsburgh Steel Co. has declared the regular quarterly dividend of 1¾ per cent on the preferred stock, payable Dec. 1.

Shareholders of the Electric Alloy Steel Co., Youngstown, Ohio, will meet Dec. 1 to pass on recommendation of directors that $750,000 of 8 per cent cumulative preferred stock be authorized.

The entire property of the Glove Metal Products Corporation, Sheboygan, Wis., will be offered at public auction by the sheriff of Sheboygan County on Nov. 10, to satisfy an execution in the sum of $67,543.94 held by the Citizens' State Bank of Sheboygan. The Globe corporation was incorporated in September, 1919, with $250,000 capital stock to do a general foundry business and specialize in the production of soil pipe and fittings. A one-story brick plant, 120 x 220 ft., was built at Erie and Wildwood Avenues, and went into operation in September, 1920. After six months work was discontinued and the plant has lain idle since last spring.

The annual meeting of the stockholders of the Crucible Steel Co. of America will be held Nov. 18, in Jersey City. Six directors will be elected to fill the places of Eversley Childs, R. H. Illingsworth, George E. Shaw, John A. Matthews, F. B. Hufnagel, and H. S. Wilkinson, whose terms expire.

Short Trade Items

The plant and equipment of the Anthracite Briquette Co., Ashbridges Bay, Toronto, Ont., has been purchased by the Financial Underwriters, Ltd., 88 Bay Street, Toronto. Under the new management a briquette made by the famous Dutch oil process, similar to Nukol, will be produced. H. F. Slater, president Financial Underwriters, Ltd., states that in all probability the newly acquired plant will be added to the assets of the Nukol Fuel Co., Ltd.

E. D. Giberson & Co., Inc., boiler tubes and steel tubing, will remove their general offices from 111 Broadway, New York, to larger quarters in the new Barrett Building at 40 Rector Street, New York.

Announcement is made by Motor Wheel Corporation, Lansing, Mich., of the formation of the Steel Wheel Co. to handle distribution of Gier Tuarc steel wheels in Greater New York, Newark, Jersey City and surrounding territory. The Steel Wheel Co. is headed by Thomas J. Wetzel. He has long represented the Motor Wheel Corporation in the East, and will continue in this capacity, in addition to his new interests.

The American Chain Co. has transferred its general sales and export department offices to Bridgeport, Conn. There will still remain at the Grand Central Terminal, New York, the Southern district and Metropolitan district sales offices.

The Jenssen Engineering Products, Ltd., Power Building, Craig Street West, Montreal, Que., recently formed, has taken over the business and plant of the Power Equipment & Supply Co. The personnel comprises: L. N. Jenssen, J. J. Corcoran, F. W. Ward and J. A. Smith. The company will analyze industrial problems, make recommendations and supply materials, machinery, equipment, buildings, etc.

The consolidation of the Lamson & Sessions Co., Cleveland, established in 1866, manufacturer of bolts, nuts, rivets, wrenches and wire rope clips, and the Falls Rivet Co., Kent, Ohio, established in 1881, manufacturer of bolts, nuts, rivets and cotters, has been completed. The executive offices, sales and purchasing departments are now consolidated in the Lamson & Sessions office at Cleveland. The directors are: F. C. Case, J. G. Jennings, George S. Case, I. L. Jennings, C. L. Warner, H. L. Judd, T. King, Roy Smith and William S. Kent.

The Raymond Bros. Impact Pulverizer Co., Chicago, has located its permanent eastern office at 50 Church Street, New York. S. B. Kanowitz will be in charge and will give engineering information on grinding.

The Powdered Coal Engineering & Equipment Co. moved its offices and plant from Chicago to Buffalo on Nov. 1. H. B. Pruden has been elected chairman of the board and J. W. Lansing, Buffalo, has been elected president. The new board of directors is as follows: J. W. Lansing, Fenton M. Parke, J. E. Finley, Harry R. Wait, J. C. Trefts, H. B. Pruden, B. W. Wistar, W. M. Faber and Stephen T. Lockwood.

The Powdered Coal Development Corporation has been organized with headquarters at Omaha, Neb. It controls the Pruden patents for the burning of pulverized coal in the western half of the United States. The company is financing and erecting central pulverizing plants and installing equipment for burning pulverized coal. Byron B. Oberst, formerly with the Interstate Oil & Refining Co., is president of the new corporation. The board of directors includes R. M. Robertson, construction engineer, American Smelting & Refining Co.; A. E. Hall, manager, Omaha plant American Smelting & Refining Co.; Jos. C. Weeth, president, Harmon Weeth Coal Co.; J. J. Dodds, president, Dodds Lumber Co.; Bert Phillips, formerly chief engineer, Collis Products Co., Omaha plant; and Irving H. Arey, with the Republic Metal Ware Co.

Machinery Markets and News of the Works

OCTOBER SHOWS GAIN

Sales for Month Exceed Those of Previous Months This Year

Several Large Railroad Lists Expected Soon at Chicago—Erie Buys 10 or 12 Machines

October business in machine tools showed a slight gain. As statistics compiled by the National Machine Tool Builders' Association tend to indicate that in previous depressions sales of small machine tools were the first to improve, it is interesting that a large manufacturer of turret lathes and screw machines sold in October about double the volume of September.

The week has been devoid of important developments, but the calling off of the railroad strike makes more promising the possibility of early buying by the railroads. Several of the Western roads with headquarters in Chicago are preparing lists with a view to purchasing about Jan. 1. The lists will probably be issued soon. The Erie Railroad has bought 10 or 12 used tools in the East and is expected to issue soon a list of its 1922 requirements.

The Board of Education of Canton, Ohio, is distributing orders among Cleveland dealers for $32,000 worth of tools for vocational training schools.

New York

NEW YORK, Nov. 1.

October showed a slight improvement in machine-tool trade, and the month was especially significant because of the greater volume of inquiry. Only a small part of the active projects have been converted into orders, but hopes are rising that the worst of the depression has been passed.

Nothing of importance has developed within the past week except the purchase by the Erie Railroad of about 10 or 12 machines for its New Jersey locomotive repair shop, which was recently destroyed by fire. All of the machines bought were so-called second-hand machines, though some of them were from export or Government stocks and had never been used. The purchases included about eight lathes, a radial drill, crank shaper, air compressor and an emery grinder. It is reported that the mechanical department of the road is working on its 1922 budget and a list of these requirements may be issued soon.

The market in cranes shows slightly more activity than for some time. Although the volume of new inquiries is no larger the interval between inquiry and order is appreciably shorter. Bidding on coal handling apparatus for Letchworth Village, Thiels, N. Y., resulted in a low bid of $11,727 by Royal B. Mansfield, 135 William Street, New York, and a high bid of $19,440 by P. T. Cox Contracting Co., 154 Nassau Street, New York. Bids were opened Oct. 31, by the Passaic Valley Sewage Commission on a contract involving a 15-ton, 15-ft. span, hand power crane. The Worthington Pump & Machinery Corporation, Harrison, N. J., has been receiving bids for some time on a 2-ton electric crane of special design. The American Car & Foundry Co., which recently purchased two 5-ton cranes from the Shaw Electric Crane Co., is in the market for two more 5-ton overhead traveling cranes, of 75-ft. and 90-ft. spans. The Wheeler Condenser & Engineering Co., Carteret, N. J., has requested bids on a 5-ton, 47-ft. span, overhead traveling crane with alternate quotation on a 3-ton crane of the same span. The American Locomotive Co., which has purchased 17 electric hoists, is inquiring for 6 more of 2-ton and 4-ton capacity. Bids are being received by the H. T. Lambert Co., 1018 First National Bank Building, Huntington, W. Va., on a building, 60 x 200 ft., which includes a 15-ton overhead traveling crane.

Among recent sales are: McMyler Interstate Co., a 20-ton locomotive crane to the Niagara Power Co., Niagara Falls, N. Y.; Shaw Electric Crane Co., two 5-ton, 47-ft. and 60-ft. spans, overhead traveling cranes to the American Car & Foundry Co.; Niles-Bement-Pond Co., a 45-ton, 34-ft. span, overhead traveling crane to the Canadian Engineering Agency, Inc., 115 Broadway, New York, for shipment to Mexico; Arthur Appleton, 29 Broadway, two 5-ton, Toledo Crane Co. wall cranes to the Imperial Japanese Navy, 1 Madison Avenue, New York; Wonham, Bates & Goode Trading Co. representing Whiting Corporation, a 10-ton, 43-ft. span hand power crane to the Delaware, Lackawanna & Western Railroad for the Glen Alden Coal Co., Scranton, Pa.

The Central Railroad of New Jersey recently purchased a 300-ton turn-table from the Whiting Corporation through Wonham, Bates & Goode Trading Co., for its Elizabethport, N. J., shops.

The Royal Metal Furniture Co., 125 Eighth Street, Brooklyn, has contracted with E. F. Warwick, 108 South Eighth Street, for a one-story addition, 70 x 75 ft., on Eighth Street. A one-story automobile service building 30 x 75 ft. will also be erected.

The C. W. Chain Co., New York, has been incorporated at $500,000 by O. S. Bowling, M. R. Schneer and G. P. Breckenridge, 7 Dey Street, to manufacture chains for industrial service, wire goods, etc.

The Knickerbocker Ice Co., 1480 Broadway, New York, has plans for a one-story ice-manufacturing plant at Washington, D. C., to cost $250,000, including machinery. C. Leslie Weir, company address, is engineer.

The Port Jefferson Shipyard Corporation, Port Jefferson, L. I., has been incorporated at $1,000,000, to operate a shipbuilding and ship repair plant. The company is represented by the Delaware Registration Trust Co., 900 Market Street, Wilmington, Del.

The Tiffany Electric Co., Inc., 165 Broadway, New York, electrical machinery and parts, has awarded a contract to the Barney Ahlers Construction Co., 110 West Fortieth Street, for a two-story, concrete machine shop, 40 x 150 ft., on Howell Street, Jersey City, N. J.

The N. O. Devices Co., New York, has been incorporated at $25,000 by A. J. Neumann, L. Ortlieb and G. Scheu, to manufacture mechanical devices, machine parts, etc. The company is represented by Graef & Arnold, 50 Wall Street.

The State Hospital Commission, Capitol Building, Albany, N. Y., is completing plans for a two-story and basement cold storage plant, 70 x 100 ft., at the state hospital, Utica, N. Y., to cost $130,000, with machinery. Lewis F. Pilcher, Capitol Building, is state architect. L. M. Farrington is secretary of the commission.

The Colonial Steel Co., Pittsburgh, tool steels, has leased the two and three-story buildings at 149-51 Varick Street, New York, heretofore occupied and held by the Garvin Machine Co., for a local branch works.

The Lamp Salvage Corporation of America, P. Sergardi, 501 West 145th Street, New York, representative, organized with capital of $500,000, to manufacture electric lamps and kindred products, has filed notice of change of name to the Phoenix Lamp Corporation.

The Radio Specialty Co., New York, has been chartered to manufacture wireless instruments, equipment, etc., by H. Kantro, H. Gernsback and D. M. Salzman. The company is represented by G. A. Hoffman, 100 Broadway.

The Inwood Consumers Ice Mfg. Corporation, 30 Church Street, New York, will commence the immediate erection of a one-story plant, 100 x 134 ft., at Ninth Avenue and 213th Street, to cost $30,000.

The shipbuilding plant on the Industrial Canal, New Orleans, La., owned by the French Government and operated by the Foundation Co., 120 Liberty Street, New York, will be disposed of at a public sale, Nov. 16-19, including machinery and operating equipment.

The Baltic Ice Mfg. Co., Brooklyn, has been incorporated at $750,000 by H. Rosenberg and M. Riech, to operate an ice-manufacturing and refrigerating plant. The company is represented by Louis Rosenberg, 116 Nassau Street.

The Transcontinental Oil Co., 576 Fifth Avenue, New York, will erect an addition to its refining plant at Fort Worth, Tex. A lubricating oil works and wax byproduct plant will also be established.

The Standard Oil Co. of New York, 26 Broadway, New

York, has bought 1,500 acres at Sparkhill, Rockland County, New York, for $2,000,000 for a new oil plant and pipeline.

Daetsch & Woodward, Inc., Brooklyn, has been incorporated at $50,000 by N. L. and M. V. Woodward and J. Daetsch, to manufacture dies, lasts and kindred metal products. The company is represented by M. S. Harris, 15 Park Row, New York.

A bond issue of $50,000,000 has been arranged by the New York Telephone Co., 15 Dey Street, New York, for the purchase of property for the construction of new central plants, extensions and improvements in present plants, new equipment, etc.

The Empire State Ice Co., New York, has been incorporated at $6,500,000, to construct and operate ice-manufacturing and refrigerating plants. The company is represented by the Corporation Trust Co. of America, duPont Building, Wilmington, Del.

The Johnson Co., 500 West 144th Street, New York, has filed plans for a one-story automobile service and repair building, 92 x 125 ft., at La Fontaine Avenue and 179th Street to cost $40,000.

The Emergency Fleet Corporation, Washington, D. C., has completed specifications and will call for bids early in November for proposed repairs to the steamship Leviathan, now docked at Hoboken, N. J., estimated to cost about $5,000,000, with equipment. Bids will be received early in January. The work will include the transforming of the power plant on the vessel from coal to oil operation, to cost $1,200,000.

The R. & D. System, Inc., New York, has been incorporated at $150,000 by R. W. Matthews, J. F. Jacobs and E. M. Souza, to manufacture oil-handling systems and devices. The company is represented by Leventritt, Cook, Nathan & Lehman, Trinity Building.

The Pure Oil Co., 74 Broadway, New York, has acquired a minority interest in the Humphreys-Mexia Co. and the Humphreys-Texas Co., operating at Mexia and Worthan, Tex., for $7,000,000. Plans are under way for the construction of a large central oil-collecting and handling plant near Galveston, Tex., with new pipe line 134 miles long, to cost $3,500,000. A new oil refining plant will also be erected at a Gulf Coast point in Texas to be selected, to cost over $1,000,000.

A new automobile repair works and service plant will be established in the one-story building, 100 x 115 ft., at Sherman Avenue and East 162nd Street, New York, which has been purchased by the Sherman Avenue Garage, Inc., recently organized.

The Messenger Tool Products, Inc., New Brunswick, N. J., has been incorporated at $150,000 by Hiram D. Messenger, Arthur A. McCoy and Raymond P. Wilson, 46 Paterson Street, to manufacture tools and other mechanical products.

The Board of Freeholders of Union County, Court House, Elizabeth, N. J., will make extensions and improvements in the power plant at the county institution at Scotch Plains, to cost about $25,000.

The National Type Foundry & Automatic Printing Co., Bridgeport, Conn., has acquired the former plant of the Blaisdell Machine Works, Vineland, N. J., and will remove its works there. The present plant capacity will be increased.

The Max Sash & Door Co., 660 Grand Street, Jersey City, N. J., has filed plans for a three-story building, to cost $40,000.

The Elizabeth Boiler Repair & Sheet Metal Works, Inc., Elizabeth, N. J., has been incorporated at $40,000 by Walter W. Teuber, Frederick Blessing and John W. Ebbets, 320 Pearl Street, to manufacture sheet metal products and operate a general boiler and plate repair plant.

The Asbestos Materials Corporation has acquired the plant of the Bateman Co., Inc., Millington, N. J., comprising a two-story reinforced-concrete building, heretofore devoted to the manufacture of agricultural implements. The new owner will take immediate possession and equip for the manufacture of asbestos products.

The Ransome Concrete Machinery Co., Dunellen, N. J., concrete mixers, etc., will build an addition 53 x 320 ft., to provide 50 per cent. increase in production. It will be used as a machine works and assembling and erecting department, with installation to include an electric traveling crane, machine tools, and other equipment. Foundation work will be placed under way at once.

A one-story power house will be constructed at the plant of the General Leather Co., 422 Frelinghuysen Avenue, Newark, N. J.

The Moffet Die Casting & Machinery Corporation, Newark, N. J., has been incorporated at $50,000 by Frederic W. Moffet, Oscar W. Nelson and Irving W. Teeple, 207 Market Street, to manufacture die castings, machine parts and other mechanical products.

Property of the Federal Tool & Machine Co., 24 Scott Street, Newark, N. J., consisting of machinery, tools, etc., will be disposed of by Herbert W. Royal, receiver.

The Newark Oil Burning Devices Co., 78 William Street, Newark, N. J., has filed notice of organization to manufacture oil burners and allied equipment. Thomas Tracy heads the company.

Igoe Brothers, Poinier Street, Newark, N. J., wire nails and other wire goods, have filed plans for a one-story addition, 90 x 225 ft., at Avenue A and Poinier Street, to cost $25,000, to be equipped as a wire mill.

The Universal Wire Machinery Co., Newark, N. J., has been incorporated at $125,000 by C. Hubert Derivaux, Joseph G. Wolber and John H. Yauch, Jr., to manufacture wire-working machinery and parts. The company is represented by Wolber & Gilhooly, 786 Broad Street.

A machine and repair shop for automobile work will be established by Hyman Mullman, Newark, in the building at 407-9 Elizabeth Avenue, 80 x 150 ft.

The Cincinnati Hy-Speed Machine Co., Cincinnati, has made an exclusive selling arrangement with the Niles-Bement-Pond Co., covering its full line of "Hy-Speed" drilling machines.

Buffalo

BUFFALO, Oct. 31.

The Jamestown Metal Desk Co., Blackstone Avenue, Jamestown, N. Y., is taking bids for a one-story addition, 80 x 100 ft. Beck & Tinkham, Frick-McGee Building, are architects.

A one-story addition, 12 x 84 ft., will be erected at the ice-manufacturing plant of the Bison Ice & Coal Co., Rapin Street, near Doat Street, Buffalo. Fred Teichert is treasurer.

The New York State Simplex Rim Corporation, Akron, N. Y., has been incorporated at $500,000 by B. W. Welch, G. McCutcheon and H. G. Wilder, Akron, to manufacture metal rims for automobile wheels. The company is represented by Penney, Killeen & Nye, Ellicott Square, Buffalo.

The Crane Machinery Co., 501 Morgan Building, Buffalo, has been appointed exclusive distributer of the Sundstrand manufacturing lathe in the Buffalo territory. The Crane Machinery Co. will also represent the Rockford Milling Machine Company in Buffalo.

The Dexter Folder Co., Pearl River, N. Y., paper folding machinery, is constructing a one-story addition, to cost $100,000, with machinery. Headquarters are at 28 West Twenty-third Street, New York.

The Romanite Products Corporation, Buffalo, has been incorporated at $500,000 by E. A. Willson, A. L. Kink and R. M. Houser, 702 Mutual Life Building, to manufacture cement products.

The Brockway Motor Truck Co., Cortland, N. Y., has awarded a contract to the Edward J. Beard Building Co., 307 Sherman Street, Albany, N. Y., for the erection of a one-story service and repair building, 50 x 100 ft., at Albany, to cost $30,000.

The Ajax Battery Co., Canaseraga, N. Y., storage batteries for automotive and other service, is perfecting plans for a plant unit, to cost $50,000.

Two buildings of the Electro-Refractory Co., Buffalo, crucibles, were destroyed by fire recently, the loss amounting to $200,000. The entire mechanical equipment was ruined, this loss being $50,000.

Philadelphia

PHILADELPHIA, Oct. 31.

The Kruger & Blind Co., 511-13 Master Street, Philadelphia, machinery and parts, has acquired property adjoining its plant at 509 Master Street, and site at 1406 North Fifth Street. Title has also been taken to the buildings now occupied on Master Street.

The Vallette Machine Co., Philadelphia, has been chartered to manufacture machinery and parts. F. H. Vallette, 314 Chestnut Street, is treasurer.

C. K. Guerard, 6422 Oak Avenue, Philadelphia, will build a one-story addition to his machine shop at 1510 Vine Street.

The United States Steel Products Corporation, Philadelphia, has been incorporated at $700,000 by Jules A. Reminger and C. Vincent Dewees, Philadelphia, to manufacture iron and steel products, automobile parts, etc. The company is represented by Amos A. Watson, Dover, Del.

The Dembach & Blissinger Motor Co., 113 North Prince

Street, Lancaster, Pa., will install a machine shop for parts production, repair work, etc., in its new eight-story service building, on North Prince Street, 35 x 65 ft., to cost $150,000. Grove C. Snyder, 28 North Mary Street, is architect. Work will be commenced at once.

Machine tools and other mechanical equipment will be installed in the new one-story vocational school to be erected by the Lower Paxton Township School Board, Paxton Township, Pa., with cost of $50,000. Frank G. Fahnestock, Jr., Patriot Building, Harrisburg, Pa., is architect.

A new power house will be erected by the Lancaster Milk Products Co., Inc., Hollinger, Pa., at its new plant to be constructed at 623 Thirty-second Street, Lancaster, Pa., with cost of $100,000. John Harmon, 48 North Queen Street, Lancaster, is architect.

The Templeton Limestone Co., Kittaning, Pa., will build a crushing plant, 30 x 60 ft., and power house, 25 x 25 ft., at its property at Templeton, near Kittaning, to replace its works recently destroyed by fire. W. L. Snyder is superintendent.

The Robbins & Myers Co., 1418 Walnut Street, Philadelphia, manufacturer of electric fans, motors, etc., with headquarters at Springfield, Ohio, has leased the one-story building at 229-31 North Twenty-third Street, totaling about 6000 sq. ft. of space, for a new local works.

A one-story machine shop will be erected by Michael Pribino, Philadelphia, at 2059 Margaretta Street. H. G. Hammer, Philadelphia, is architect.

The National Automatic Electric Iron Co., Philadelphia, is being organized by Samuel and Lewis H. Dworkin, and Fred Kohn, to manufacture electric irons and other electrical products. Levi & Mandel, North American Building, represent the company.

Fire, Oct. 27, destroyed a portion of the pipe shop and carpenter shop at the plant of the Barrett Mfg. Co., Thirty-sixth Street and Grays Ferry Road, Philadelphia, roofing products, etc., with loss of $11,000.

The Department of City Transit, City Hall, Philadelphia, will take new bids for a power house at Cumberland and Kensington streets.

The J. W. Paxson Co., 1021 North Delaware Avenue, Philadelphia, foundry equipment, has disposed of its property at 1015-21 North Delaware Avenue, to D. C. Folwell, who in turn has transferred the site and buildings to the Pennsylvania Sugar Co., with refinery on adjoining land and which will use the property for expansion. The Paxson company is now building two plant structures at D Street and Nicetown Lane.

The American Ice Co., Sixth and Arch streets, Philadelphia, will soon take bids for a new ice plant at Belmont and Girard avenues.

The Hydro-United Tire Co., Pottstown, Pa., is building an addition costing $250,000, including equipment. The work is well under way and when completed will give the company a plant double its present capacity.

T. Clark, 2728 North Second Street, Philadelphia, has filed plans for an addition to his machine shop, 30 x 60 ft., at 2732 North Second Street.

The Department of Public Works, Bureau of City Property, City Hall, Philadelphia, will build a power house for the buildings comprising Independence Hall, Sixth and Chestnut streets. John P. B. Sinkler, Otis Building, is architect.

The Walton Auto Supplies Co., 754 South Broad Street, Philadelphia, has completed plans for a three-story service and machine repair building, 90 x 100 ft., at Broad and Bainbridge streets. J. E. Fieldstein, 901 Walnut Street, is architect.

The American Type Founders Co., Communipaw Avenue, Jersey City, N. J., has leased property at 1007-11 North Front Street, Philadelphia, for a new local works.

The Penn Seaboard Steel Corporation, Franklin Bank Building, Philadelphia, has arranged for the purchase of the plant and business of the Titusville Forge Co., Titusville, Pa. To finance the acquisition the company has arranged for an increase in capital from 350,000 to 700,000 shares of stock, no par value. J. B. Warren is president.

The State Highway Department, Broad Street Bank Building, Trenton, N. J., has completed plans for a one- and two-story automobile service and repair building, 100 x 400 ft., at Fernwood, N. J., for state motor cars and trucks, to cost $350,000. T. J. Wasser, address noted, is engineer.

The Towanda Electric Illuminating Co., Towanda, Pa., will build a new power house.

The Ohio Generating Co., Red Lion, near York, Pa., recently organized to manufacture isolated power plants for farm and other rural service, is having plans prepared for a local plant, four-story, 65 x 110 ft. Joseph Dise, Glen Rock, Pa., is architect. C. A. LaMotto is president.

The Lansdale Porcelain Enamel Works, Inc., Lansdale, Pa., has been incorporated at $30,000, to manufacture enameled products. Abraham H. Landis, Lansdale, is treasurer.

The Ideal Motor Car Co., 1432-38 Union Street, Allentown, Pa., will build a two-story addition to its service and repair works, 60 x 100 ft. C. W. Hilbert is head.

The Mifflinburg Body Co., Mifflinburg, Pa., automobile bodies, will build a three-story addition, 62 x 90 ft., to cost $75,000. J. C. Sterling is head.

The Fayetteville Electric Light & Power Co., Fayetteville, Pa., recently organized, will operate a local power plant and system. H. G. Sollenberger, Fayetteville, is treasurer.

C. A. Reed & Co., Willow and Laurel streets, Williamsport, Pa., will build a four-story plant, 70 x 100 ft., for the manufacture of paper products, to cost $100,000 with machinery. The company was recently incorporated at $300,000. Harry A. Miller is treasurer. F. Arthur Rianhard, Masonic Temple Building, is architect.

The Keystone Iron Works, Inc., Honesdale, Pa., has been incorporated at $25,000 by Edward Manger, Frederick Parrish and John H. Gumpper, Honesdale, to manufacture iron products, castings, etc. The company is represented by the Colonial Charter Co., Ford Building, Wilmington, Del.

Pittsburgh

PITTSBURGH, Oct. 31.

Actual business shows no appreciable increase, but the trade believes that when something now is asked for there is a real purpose to buy. A number of inquiries have followed the awarding of contracts for new structures, and this means, of course, that the equipment asked for will be placed. Several equipment inquiries, which have long been dormant, have been revived recently and revised prices against them asked for. In the steel making centers the tendency is still to defer purchases until 1922 to conserve cash resources. The Standard Underground Cable Co., Pittsburgh, will want two cranes for each of its plants here and in St. Louis. For the latter plant one 5-ton and one 15-ton will be wanted and for the Pittsburgh plant one 5-ton and one 10-ton, all to be floor-operated. The United Metal & Iron Co. recently closed with the Northern Engineering Works for a 1-ton electric hoist and the West Penn Steel Co. has bought a 5-ton, 47-ft. span, Shaw crane.

The plant and business of the P. Wall Mfg. Co., Preble Avenue, Northside, Pittsburgh, ice cans for refrigerating service, oil cans and tanks, blow torches, etc., has been acquired at $600,000 by Page Brothers & Co., Pittsburgh. The new owner will organize a company at once to continue production at the plant, under the management of Frank T. Page and John M. Irwin.

The West Virginia Armature Co., Bluefield, W. Va., electrical equipment, recently reorganized, has acquired the property of the American Armature & Engineering Co., same city, for expansion. W. A. Bishop is president, and A. L. Smith, vice-president and general manager.

The Cherry River Paper Co., Richwood, W. Va., will build a one-story power plant, 40 x 150 ft., to cost $250,000, with machinery. George Snyder is assistant superintendent.

Machine shop equipment, electrical apparatus and other mechanical equipment will be installed in the new two-story industrial school building to be erected by the Industrial School for Boys, Bruntytown, near Grafton, W. Va., to cost $100,000. H. E. Elesher is superintendent. R. A. Gillis, American Building, Fairmont, W. Va., is architect.

The Marion Motor Co., Fairmont, W. Va., recently organized with headquarters at 304 Jacobs Building, has plans for the erection of a one-story service and automobile machine and repair works. R. A. Johnson is treasurer.

The Roeper Crane & Hoist Co. has taken a 10-ton, 34-ft. 6-in. I-beam crane with chain hoist suspension for Ford City, Pa. The Buckeye Machine Co., Lima, Ohio, was lower bidder for a 120 hp. vertical, heavy duty oil engine for the Ensworth dam, bids for which recently were asked for by the Federal Engineers Office, Pittsburgh district.

The Union Ice Co., 124-126 West Ohio Street, Pittsburgh, has completed plans for a one-story ice plant, 65 x 130 ft., on Beaver Avenue, to cost $75,000.

The Madison Auto & Repair Co., Pittsburgh, is being organized by John Wolf, Robert A. Fisher and William K. MacKay, to operate an automobile parts manufacturing and assembling works, and general machine repair plant. Ap-

plication for a state charter will be made on Nov. 14. W. F. Stadtlander, 415 Frick Building, represents the company.

The Moffit-Sterling Gas Coal Co., Charleroi, Pa., will build a new steel tipple at its coal properties at Dillinger, Greene County, with hoisting capacity of about 2000 tons a day.

The Charleroi Iron Works, Charleroi, Pa., structural shapes and other iron and steel products, will remove its works from McKean Avenue to a new building recently completed in the lower part of the city. Increased production will be provided.

McLean & McGinness, 366 Stratford Avenue, Pittsburgh, wagon parts, etc., have awarded a contract to Henry Shank & Co., Century Building, for an addition, 40 x 100 ft., on Liberty Avenue, to cost $45,000. James H. McLean heads the company.

The United Iron & Steel Co., Pittsburgh, has filed notice of dissolution. It recently disposed of its property to the Hanna Furnace Co., Cleveland.

The United Light & Power Co., Charleston, W. Va., will make extensions and improvements in its electric plant and system in the vicinity of Iaeger, W. Va., to cost $25,000. F. B. Lamb is head.

The Philadelphia Co., 435 Sixth Avenue, Pittsburgh, operating the Duquesne Light Co. and numerous other public utility properties, has arranged for a bond issue of $16,000,000 for general operations, extensions, improvements, etc. A. W. Thompson is president.

The Pittsburgh Japanning Co., Pittsburgh, has been incorporated at $150,000, to manufacture japanned metal products and other metal goods. The company is represented by the Capital Trust Co., Dover, Del.

The Pittsburgh Malleable Iron Co., Thirty-fourth and Smallman streets, Pittsburgh, has filed plans for a one-story building at its works on Spruce Alley.

The Stonecrete Corporation, 6023 Penn Avenue, Pittsburgh, plans a two-story plant at Cheswick, for the manufacture of cement products. Charles B. Lawton is head.

The United States Engineer Office, Pittsburgh, will receive bids until noon, Nov. 23, for the construction of six steel dump scows.

The Clarion River Power Co., Beaver Falls, Pa., has tentative plans for a hydroelectric generating plant on the Clarion River, to cost $2,000,000. Col. Joseph H. Thompson, Beaver Falls, represents the company. Headquarters are at Foxburg, Pa.

The American Natural Gas Co., Park Building, Pittsburgh, will soon commence the erection of a one-story building at Vandergrift, Pa., 30 x 100 ft., to be equipped in part as a machine and repair works.

New England

BOSTON, Nov. 1.

Fewer machine tools were sold in New England the past week than the previous week, but prospects have increased, inquiries cover a wider range of machinery and sentiment among the equipment dealers is even more hopeful than it was. Heretofore, inquiries have run largely to lathes, milling machines and presses. The past week witnessed reviving interest in thread millers, screw machines and other tools. It is now generally conceded August represented the low point in New England machine tool sales for 1921. September saw a slight improvement in business and October bookings, not only in dollars and cents but in individual sales as well, measured up better than in September, while there is enough prospective business practically assured to warrant the belief the November showing will be better than the October. Lack of ready funds has held up small shop owners in purchases of new machinery, and the same is true with large interests.

Among sales reported this week are a 30 x 30 x 8 planer, a 20-in. x 8 ft. lathe, a Greenfield grinder and other smaller used tools to a Plainfield, N. J., manufacturer; a complete line of new equipment, including a No. 54 combination punch and shear, a Blount grinder and a hack saw to a new local iron working concern; a half dozen special lathes, an upright drill, a shaper and a milling machine, all used tools, to a manufacturer of textile machinery; a used 14-in. lathe to a Whitinsville, Mass., interest; a new Sip sensitive drill with an 8-in. overhead and a new 16-in. x 10 ft. lathe to a Massachusetts manufacturer. A middle Massachusetts metal worker has purchased three used Waterbury-Farrel presses and has taken an option on 20 additional used machines offered by a Connecticut dealer, while a local firm is negotiating with a customer on seven fairly large used presses. Other prospective orders, each involving one or more machines and a scarcity of desired makes and sizes have enlivened the market for used presses. Indications are a Pawtucket, R. I., interest will shortly close on a list of more than a dozen tools. Contrary to earlier report, the Manchester, N. H., high school machine tool list has not been closed. Few if any machines have been bought against this list. Some bidders are asked to revise quotations submitted earlier and others are given to understand the business will soon be closed. There is considerable activity in wood working machinery.

An inquiry for a 5-ton crane from a nearby stone cutting concern is the only new development reported in the crane market.

A sale of block gages costing well up in four figures is reported, and the buyer is negotiating on additional sets. C. E. Johansson, Inc., Poughkeepsie, N. Y., has announced a reduction in prices on gages. The company's No. 1 set of combination gages, eighty-one blocks, with accessories, heretofore costing the consumer $800, is now $625. The No. 0 set, with accessories, which formerly sold at $1,500, is now $1,000.

Construction of its new warehouse on Andrew Square, South Boston, is sufficiently progressed to permit the Machineshop Equipment Corporation, 170 Oliver Street, to move some stock.

The American Tube Works, Somerville Avenue and Dane Street, Somerville, Mass., will erect a one-story, 32 x 45 ft. pump house.

L. A. Vachon, Washington Street, Brookline, Mass., is erecting a two-story, 60 x 149 ft. service station and automobile salesroom.

The Williams & Anderson Co., 33 Broad Street, Providence, R. I., jewelry, is erecting a one-story, 60 x 100 ft. manufacturing plant.

The Pittsfield Lime & Stone Co. will quadruple the capacity of its Richmond Summit, Mass., plant. Rolla N. Soper is head.

The Elastoid Fibre Co., Waltham, Mass., is erecting a one-story, 70 x 180 ft. manufacturing plant between Lexington and Beacon streets, that city.

A contract has been let for the rebuilding of a one-story, 100 x 150 ft. section of its plant by the Springfield Ice Co., Springfield, Mass.

Wessell, Nickel & Gross, New York, are planning to open a large plant at Barton, Vt., for the manufacture of piano actions, within the near future. Machinery is being installed.

A Massachusetts charter has been granted the Babson Can Co., Boston, with a capital of 1000 shares, no par value. Stanley W. C. Downey, 50 Stratford Street, West Roxbury, is president, and Harry Sebell, 441 Broadway, Medford, treasurer.

The Essex Sheet Metal Works, Inc., Lynn, has incorporated, with Max Sontz, 25 Prospect Street, Lynn, president, and Esah Garfinkel, same address, treasurer. The company's capital consists of 100 shares, no par value.

Joseph M. Andre, Jr., and Manuel J. Andre, both of South Easton, Mass., are president and treasurer, respectively, of the Andre Mfg. Co., Inc., Boston, which has been granted a charter to manufacture and deal in clocks, phonographs and phonograph novelties. The company is capitalized at $100,000.

The Massachusetts department of public utilities has granted permission to the Edison Electric Illuminating Co. of Boston to issue 45,056 shares of stock, par $100, at $130 a share, to pay notes maturing Jan. 15 next, and two weeks later, the proceeds to be used for further plant expansion.

The George F. Wright Steel & Wire Co., Worcester, Mass., recently organized with a capital of $250,000, is arranging for the early operation of its plant at Jamesville, Mass., comprising the former works of the Standard Plunger Elevator Co., lately acquired. Equipment will be installed for the manufacture of wire cloth, wire netting for fence service, wire lath, wire rope and other kindred products. George F. Wright, formerly vice-president Wickwire-Spencer Steel Corporation, is president; and Herbert N. Wright, former treasurer Wright Wire Co., will act in a like capacity with the new organization.

The New Process Cutlery Co., New Haven, Conn., has been incorporated at $50,000 by W. H. Hurley, B. W. and G. F. Humming, 410 Dixwell Avenue, to manufacture cutlery products.

The estate of Edward Malley, 902 Chapel Street, New Haven, Conn., has filed plans for the erection of a one-story power house, 72 x 80 ft., on Temple Street, to cost $50,000.

A. E. Astle, Houlton, Me., has leased the local machine and repair shops of the Bangor & Aroostock Railroad Co., used heretofore chiefly for freight car work. The plant will be continued in operation, handling railroad and other heavy

repair and construction work. The new management will be operative early in November.

The Springfield Ice Co., 47 Dwight Street, Springfield, Mass., has completed plans for a one-story ice plant, 100 x 150 ft., work to start at once.

Bird & Son, Walpole, Mass., roofing, have completed plans for an addition. Work will be started soon.

Wessell, Nickel & Gross, 457 West Forty-fifth Street, New York, will establish a new plant at Barton, Vt., for the manufacture of player piano mechanisms. A local building has been acquired and machinery will be installed at once.

The Henry Weyand Co., 16 Jefferson Street, Waterbury, Conn., sheet metal products, has awarded a contract to the Lacroix Construction Co., 95 Bank Street, for a three-story addition, 80 x 110 ft.

The Donnelly Brick Co., New Britain, Conn., plans the rebuilding of its plant, destroyed by fire. The work will include a new machine department, dryer department, tunnel kiln building and other structures. Erection will be commenced soon.

The United States Hardware & Mfg. Co., Pawtucket, R. I., has been chartered to manufacture hardware and other metal products by Harry F. Burnham, John D. Sawyer and John R. White, 68 Ogden Street

The Mack Motor Truck Co., Massachusetts Avenue, Cambridge, Mass., has awarded a contract to the Blake & Pope Co., 15 Beacon Street, Boston, for a one-story addition, 44 x 110 ft., on Osborne Street.

The Viscaloid Co., Lancaster Street, Leominster, Mass., celluloid products, has awarded a contract to Wiley & Foss, Central Street, Fitchburg, Mass., for a three-story addition, 40 x 50 ft.

The Worthington Pump & Machinery Co., 265 Third Street, Cambridge, Mass., has awarded a contract to the Canter Construction Co., 6 Beacon Street, Boston, for a one-story addition on Fifth Street.

Chicago

CHICAGO, Oct. 31.

A number of railroads with headquarters in Chicago are preparing large lists on which action may be taken about the first of the year. It is possible that purchases against some pending railroad inquiries will be made before that time.

Reductions of about 12½ per cent on engine lathes, radial drilling machines and upright drills, have become generally effective.

Business during the past week was checked because of the prospect of a railroad strike and with this uncertainty now out of the way there is a more cheerful tone. Dealers report that October was very dull, but nevertheless brought a slight improvement over September. Inquiries are few, but here and there fair purchases are in prospect. One dealer is working on an inquiry from a Middle Western State for a 25-in. x 14-ft. engine lathe, a 20-in. shaper, a No. 2 universal heavy milling machine, a punch and shear with a capacity for a ¾-in. hole in ¾-in. metal, and a 75 to 100-lb. power hammer. J. C. Austerberry, dealer in machine tools and accessories, 684-690 East Congress Street, Detroit, is in the market for the following machine tools, either new or in good second-hand condition: One Norton auto parts grinder, or its equivalent; one No. 55 Heald grinder; one No. 60 Heald grinder; one No. 65 Heald grinder; one Springfield 14-in. x 5-ft. engine lathe, or its equivalent; one American 2-ft. radial drill, or its equivalent; one Etna swaging machine with capacity to take ¾-in. copper tubing.

The Warner Corporation, Muncie, Ind., is in the market for two used No. 12 Barber-Colman gear hobbing machines, and one used No. 13 Natco multi-drill with rectangular head.

The Riechman-Crosby Co., Memphis, Tenn., is in the market for a used keyseating machine, either a Davis or Mitts & Merrill machine, to have a range from ¼-in. to 1-in. inclusive.

The Street & Kent Mfg. Co. plumbers' brass goods, 549 Fulton Street, Chicago, has purchased the two-story and basement factory and the one-story and basement foundry, with a total floor space of 28,558 sq. ft., at the northwest corner of Clybourn and Clifton avenues, from the Alfred O. Blaich Co., case hardening material. The plant was built in 1913 and has been sold because it is believed that an eastern location is a logical place for its operations. The Street & Kent Mfg. Co. has been operating at the Fulton Street address for the past 20 years.

The Atchison, Topeka & Santa Fe Railway Co. will construct several extensions to its machine shops at San Bernardino, Cal., to cost $224,000. It will also install a boiler washing plant in connection with its shops at that place.

The Peterson & Reedy Pattern Works, wood and metal patterns, 4650 Iowa Street, Chicago, have let contracts for a one-story pattern shop, 24 x 100 ft., 4832 West Division Street, to cost $5,000.

Voltz Brothers, 813-15 Gilpin Place, Chicago, have let a contract for a two-story wagon factory, to cost $15,000.

Holton, Seelye & Co., builders, 140 South Dearborn Street, Chicago, have secured a permit to construct a one- and two-story factory, 96 x 159 ft., for a manufacturer of electric light fixtures, at 3322-28 Carroll Avenue, to cost $18,000.

Joseph Spingola 750 West Taylor Street, Chicago, has let a contract for one- and two-story garage and office building, 75 x 119 ft., 918-22 South Morgan Street, to cost $40,000.

The Crane Co., 836 South Michigan Avenue, Chicago, will build a one-story machine shop at its branch works at East Chicago in conjunction with a new warehouse at that location, to cost $30,000.

The Big Four Battery Co., Hammond, Ind., has filed a petition in bankruptcy. Assets are listed at $7,294 and liabilities at $6,533.

Peter Sitzler, Spirit Lake, Iowa, has sold his foundry business to Woods & Woods. O. B. Wilcox will be in charge.

The Muskogee Tool Co., oil well and coal mining tools, Henryetta, Okla., has started excavations for shop and foundry buildings.

The Reynolds Spring Co., Jackson, Mich., has awarded a contract for a two-story factory, 130 x 201 ft., to cost $125,000.

Cleveland

CLEVELAND, Oct. 31.

The machine tool business as a whole showed some gain in October as compared with September and inquiries are coming out in little better volume. One builder of turret lathes and screw machines reports that October sales were double those in September and makers of automatic screw machinery are getting a little better volume of orders, but these are nearly all for single machines. Some local dealers sold more machinery during October than during the previous month, but others report no gain in sales. The lines most active with dealers are upright and vertical drills, planers, shapers and power presses. Most orders are for single machines, and the demand is more active for used than for new machinery. Dealers are working on few inquiries for more than two machines.

The machinery equipment for the McKinley High School, Canton, amounting to about $32,000, which has been held up for several weeks, is now being distributed among several dealers. During the week a Cleveland machinery house secured new orders for four machine tools which had been cancelled some time ago, in the Dayton territory.

The Glenwood Motor Co., Cleveland, has acquired a site in Findlay, Ohio, for an automobile plant. It has been developing a car under the name of the Glenwood Engineering Co., Euclid Avenue and East Seventy-first Street, Cleveland. The proposed plant will provide 90,000 sq. ft. of floor space and will be used for assembling purposes. B. J. Cline is president.

The Billings-Chapin Co., paint, Cleveland, will erect a four-story plant, 80 x 110 ft.

The Union Chain & Mfg. Co., Seville, Ohio, has purchased the former plant of the Sandusky Drop Forge Co., Sandusky, Ohio, and will move to its new quarters when alterations have been made.

A new machine shop has been opened in Jefferson, Ohio, by I. V. Fetch and S. A. Clark for cylinder grinding and general machine shop work.

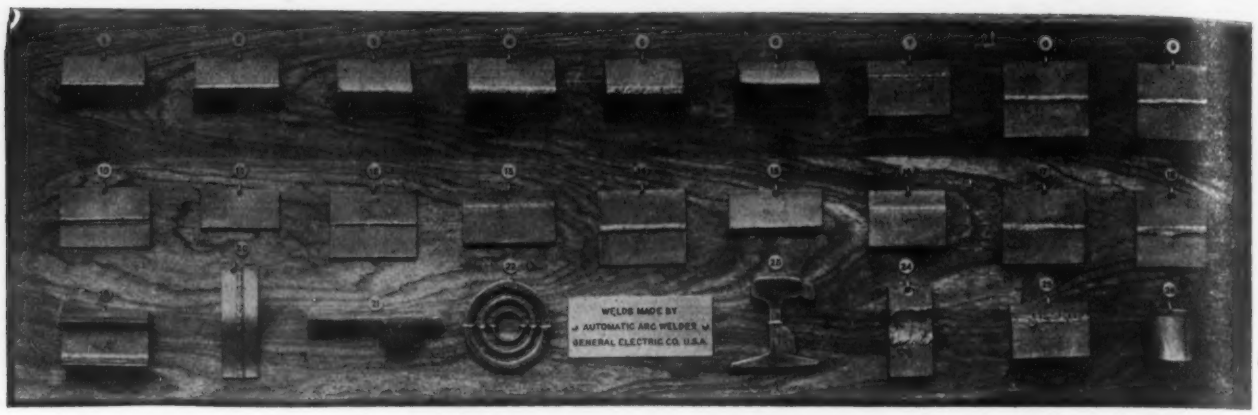
The S. H. Vehicle Co., East 65th Street and Morgan Avenue, Cleveland, has started the erection of a three-story factory, 90 x 200 ft.

The Anderson Piston Co., Bowling Green, Ohio, has purchased the plant formerly occupied by the Vim Motor Mfg. Co., Sandusky, and will shortly move to that site. The company has a capital stock of $500,000. H. H. Elwood is president and C. C. Anderson is manager.

The Hubbell Tire & Rubber Co., 6545 Carnegie Avenue, Cleveland, has acquired the plant of the Trumbull Tire & Rubber Co., Newton Falls, Ohio, the new owner to take immediate possession and to install new machinery.

The Rail Welding & Bonding Co., Woodland Avenue and East Twenty-eighth Street, Cleveland, will commence the early erection of a one-story and basement addition, 90 x 180 ft., to cost $50,000. The Austin Co. is contractor.

The P. R. Morren Foundry Co., 4260 East Ninety-eighth Street, Cleveland, has completed plans for a one-story



AUTOMATIC ARC WELDING SAMPLE BOARD

Combined sample and data board made up by the General Electric Co., on which is mounted a collection of samples representing various types of welds that can be made with the automatic welding equipment. Each sample is numbered, and after the corresponding number in the table below is given the data on the welding speed, the size of electrode, and the current used.

Sample No.	Type of Weld	Gage of Metal	Welding Speed In. Per Min.	Welding Current Amp.	Size of Electrode In.
1	Angle weld	16	14	75	1/16
2	Angle weld	13	10	120	3/32
3	Angle weld	11	9	110	3/32
4	Angle weld	7	5½	130	1/8
5	Angle weld	3	3½	150	1/8
6	Section of bottom of oil switch tank, lap welded	11	9	120	3/32
7	Lap fillet weld	16	10	60	1/16
8	Butt weld with backing strip	16	11	130	3/32
9	Butt weld	11	9	140	3/32
10	Lap weld	20	12	65	1/16
11	Edge weld	16	12	60	1/16
12	Butt weld	16	13	70	1/16
13	Lap fillet weld	13	10	105	1/16
14	Butt weld	13	10	100	3/32
15	Edge weld	11	9	110	3/32
16	Lap fillet weld	11	9	140	3/32
17	Butt weld	7	7	180	1/8
18	Butt weld	3	5	175	1/8
19	Fabrication of steel	9	8	150	3/32
20	Automatic will weld over irregular contour	9	8	150	3/32
21	Quarter section of built up, worn or undersized shafting	..	8	140	3/32
22	Section of welded tubing	1	3	170	1/8
		11	9	120	3/32
		18	20	65	1/16
23	Section of steel faced copper railbond hand welded to steel rail	..	*	175	3/32
24	Butt weld—three layers	½"	2	170	1/8
25	Lap fillet weld—one layer	3	5	175	1/8
26	Welded steel tubing	20	25	50	1/16

*Total time to weld bond to rail, 3½ min.

foundry, 40 x 102 ft., and pattern shop, 16 x 72 ft., on Dunlap Avenue, to cost $45,000.

The American Mine Door Co., Canton, Ohio, will defer its plant addition until early spring. Plans have been completed for a one and two-story building, to cost $100,000, with machinery. The Austin Co., Cleveland, is structural engineer.

The Youngstown Ice Co., Stambaugh Building, Youngstown, Ohio, has awarded a contract to the Heller-Murray Co., West Bayen Avenue, for a one-story truck repair shop and service building for company motor trucks, 100 x 113 ft. and 21 x 75 ft., on Hubbard Road.

The Hodes Zinc Co., Fremont, Ohio, automobile accessories, has acquired the former three-story plant of the Shelby Salesbook Co., for a new works.

The Pennsylvania-Ohio Power & Light Co., Lowellville, Ohio, plans the immediate erection of an addition to its local generating plant for the installation of new turbo-generating and auxiliary equipment, with capacity of 20,000 kw.

Detroit

DETROIT, Oct. 31.

The United Engine Co., Lansing, Mich., has arranged to take over the American interests of the Aktiebolaget Pump Separator Co., a Swedish corporation. The deal entails the transfer of properties and accounts valued at approximately $750,000. The Swedish concern has branches throughout the United States. Plans include the removal of the tinning and repair shop from St. Louis, Mo., to Lansing.

The Homer Furnace Co., Coldwater, Mich., recently received an order for 700 furnaces, and production has been brought up to between 50 and 75 furnaces a day. Officials of the company announce that the company has no intention of removing from Coldwater, as previously announced.

Work has been nearly completed on the new plant of the Michigan Sheet Metal Works, Lansing, Mich., and equipment and machinery are being removed from the old plant. The company reports an increase in business and expects to make further improvements and extensions early next year.

The Beach Mfg. Co., Charlotte, Mich., manufacturer of steel bridges and culverts, is erecting a plant addition, one story, 30 x 150 ft.

The Kirchen Machine Co., Lansing, Mich., has received an order for the immediate machining of 5,000,000 rail wedges for the Lansing Forge Co., of Lansing. The Lansing Forge Co. is forging the devices and will deliver them to a railroad company in Mexico. The order represents, according to officials of the Kirchen Machine Co., an investment of approximately $500,000. This contract will keep the Kirchen Machine Co. busy throughout the entire winter.

An addition of 56,000 square feet of floor space will be added to the Lloyd Mfg. Co.'s factory in Menominee, Mich., before the first of the year, giving the plant a total floor space of 300,000 sq. ft. The company manufactures baby carriages.

The Tirrel Mfg. Co., Bridgman, Mich., has been organized, with a capital of $60,000, to manufacture nozzles, pumps, engines, devices and equipment and carriages for spraying of fruit trees, etc. The incorporators are Leslie L. Tirrel, New Troy, Mich., and W. H. Gast and H. E. Howard, Bridgman. It is probable that the company will soon be in the market for manufacturing equipment

The Kalamazoo Motors Corporation, Kalamazoo, Mich., has increased its capitalization from $250,000 to $1,000,000.

The Bennett Oven Co., Battle Creek, Mich., has increased its capitalization from $40,000 to $75,000.

The Gillett Motor Products Co., Howard City, Mich., has increased its capitalization from $100,000 preferred to $100,000 preferred and 75,000 shares, no par value.

The River Foundry Co., Detroit, has been organized with a capitalization of $5,000, to manufacture iron, steel and alloy castings. The incorporators are Joseph C. Arnold, 341 Kitchener Avenue, Detroit, and Robert Baheman and Dobre Yordanescy, Detroit.

The Chevrolet Motor Car Co., Flint, Mich., has ordered 600 starters per day for an indefinite period from the Electric Auto-Lite Co., Toledo, Ohio.

The Sparks-Withington Co., Jackson, Mich., has perfected an adjustable bracket that will permit the use of the standard Sparks-Withington Motor horns and equipment on any of 100 types of cars. The bracket is made to be attached to a cylinder head. This bracket will be put in production as soon as arrangements for so doing can be completed.

The Shaw Brothers Motor Car Co., a recently organized

Detroit concern, will soon announce a four-cylinder motor car in the $700-$800 class. It is expected that this company will soon get into production.

The Waterloo Mill & Ice Co., Monroe, Mich., has been organized, with a capital of $60,000, to operate the Waterloo Mills of that city and to build an artificial ice plant. Work will be started within the next week or so and it is expected to have the plant completed by Feb. 1.

The Angle Steel Tool Co. is preparing to move its plant from Otsego to Plainwell, Mich. This week ground was broken for two new buildings, 70 x 140 ft., and 60 x 80 ft. Recently this concern increased its capital from $15,000 to $85,000. The company makes steel stools, chairs, cabinets and trucks.

Continental Motors, Inc., has closed a contract to supply Durant Motors with between $12,000,000 and $15,000,000 worth of automobile motors. It will add at least 2000 employees to the payroll of the Muskegon plant.

The Belvidere Heating Co., Belvidere, Ill., heating equipment, plans a two-story plant, to cost $50,000. J. Myers heads the company.

The Zonta Tire & Rubber Co., 3100 Floyd Avenue, Sioux City, Ia., has commenced the erection of a three-story and basement plant, 150 x 172 ft., to cost $150,000, with machinery for the manufacture of automobile tires. W. W. Beach & Co., Commerce Building, are architects.

The Minneapolis & St. Louis Railway Co., Transportation Building, Minneapolis, plans a one-story car repair shop at its Cedar Lake shops, Douglas and Kenwood streets. R. C. Kenly is chief engineer.

The Hannifin Mfg. Co., 621 South Kolmar Avenue, Chicago, air chucks and kindred mechanical products, will defer until early spring the erection of its two-story plant at Wellington and Knox streets, 90 x 160 ft., to cost $150,000. Bids will be asked at that time.

The Paul J. Kalman Co., 22 West Munroe Street, Chicago, steel reinforcing bars and other steel products, plans the erection of a steel fabricating plant at Youngstown, Ohio, one-story, 400 x 420 ft., to cost $200,000, including equipment.

The Keith Heating Co., 200 Court Avenue, Des Moines, Ia., furnaces, heating equipment, etc., has awarded a contract for the foundation work for its plant 100 x 142 ft., to cost $200,000, with machinery. Boyd & Moore, 1024 West Grand Street, are architects.

The Hercules Steel Post Co., Niles, Mich., will erect a one-story factory next spring, 50 x 250 ft., to cost $30,000.

The H. A. Blake Machine & Foundry Co., Cheboygan, Mich., has filed articles of incorporation, with capital of $50,000. The incorporators are Annie A., Jessie P. and John A. Blake.

The Hughes Steel Equipment Co., Allegan, Mich., has purchased the property of the Hensel Battery Co., and will enlarge its output.

The American Bridge Co., Chicago, is erecting a six-story dairy salt plant at Manistee, Mich., for Ruggles & Rademacher. The steel work is progressing rapidly.

The United Engine Co., Lansing, Mich., will take over the American interests of the Aktiebolaget Pump Separator Corporation, according to announcement made by C. L. Sprinkle, president of the Lansing concern. The deal entails the transfer of property and accounts to the value of $750,000.

Cincinnati

CINCINNATI, Oct. 31.

There have been no developments of note in the machinery market during the week. While the first part of October showed increased activity over the preceding months, orders placed during the latter part were fewer. There is, however, a more noticeable feeling of optimism regarding the prospects. The inquiries, while small, are of a tone that promise business in the near future. Local dealers covering the Cincinnati district report a great deal of planning by metal manufacturers on how to increase efficiency in their shops and in many cases new machinery will be installed as soon as plans are completed. The market on used machinery is fairly active and some low prices are being quoted to move this equipment.

The Newman Mfg. Co., Cincinnati, brass and bronze work, has acquired the former plant of the Gibson Art Co. at 416 Elm Street, and will move there early in 1922.

The Lincoln Tractor & Implement Co., Dayton, Ohio, has been incorporated at $1,000,000 to manufacture a moderate-priced tractor. Harrison Craig and O. W. Norton, Urbana, Ohio, and E. H. Rump, John H. Best and Joseph J. Link, Dayton, Ohio, are among the incorporators.

Baltimore

BALTIMORE, Oct. 31.

The Maryland Culvert & Metal Co., 1301 Munsey Building, Baltimore, is constructing a 28 x 36 ft. addition to its Ridgely Street plant. W. M. Baker is president.

The Liberty Tool Co., 1403 Fidelity Building, Baltimore, has been incorporated at $20,000 by Roger Howell, John S. Yost and Helen B. McIlhenney.

The Patuxent Clay Products Co., 206 Water Street, Baltimore, plans a $150,000 plant for the manufacture of hollow tile.

The Aumen Machinery Co., 107 East Lombard Street, Baltimore, has been appointed exclusive distributer for the Rockford Milling Machine Co. and the Rockford Tool Co. in the Baltimore territory.

The Atlas Wheelbarrow Co., 405 South Washington Street, Easton, Md., will erect a two-story building, 50 x 200 ft., to cost $40,000.

The A. B. Sexton Stove & Mfg. Co., 501 West Conway Street, Baltimore, acquired the plant of the Isaac A. Sheppard Co., Excelsior Stove Works, Easton Avenue and Chester Street, at a receiver's sale, Oct. 25, for $101,000. The property totals 187 x 300 ft., and consists of a foundry, 75 x 300 ft., power house, five warehouses and other buildings, with machinery and equipment. It will be used by the new owner for stove and range manufacture.

Fire, Oct. 22, destroyed the power house, consisting of boiler and engine departments, at Mine No. 13, of the Consolidation Coal Co., Consolidation, near Frostburg, Md. The plant will be rebuilt.

The Hancock Steel Co., Martinsburg, W. Va., will call for bids in November for the initial building at its new plant at Brocius, near Hancock, Md. The unit will be one-story, 130 x 200 ft., and equipped as a machine shop and foundry. Ernest McGeorge, 1900 Euclid Building, Cleveland, is engineer. F. Vernon Aler heads the company.

The Sectional Tire Works, Inc., Wilmington, Del., has been incorporated at $60,000, to manufacture automobile tires, being represented by the Corporation Registry Co., 900 Market Street, Wilmington.

The Industrial Service Corporation, Hopewell, Va., has acquired the local power plant and waterworks of the du Pont Chemical Co. Possession will be taken early in November, and operations conducted under the new management, which plans for expansion. J. F. Muhlig is general manager.

The Heaton Coal Co., Tacoma, Va., recently organized at $50,000, plans the installation of electrical machinery and other mining equipment. L. L. Heaton is president and general manager.

The Anheuser-Busch Co., Norfolk, Va., will soon take bids for an ice-manufacturing plant addition to cost $250,000, with machinery. Ophuls, Hill & McCreery, 112 West Forty-second Street, New York, are engineers.

The Georgia Marble Co., Tate, Ga., has plans for a plant at its local properties, 170 x 370 ft., to be equipped for handling rough and finished material. A large sawing department will be installed, polishing department, machine works, with electric traveling cranes and other kindred equipment. Machinery will be electrically driven.

The Chesapeake Mfg. & Creosoting Co., Portsmouth, Va., plans for the rebuilding of the portion of its local plant, recently destroyed by fire.

The Citizens' Ice & Fuel Co., Columbus, Ga., plans for an ice-manufacturing plant to cost $40,000. W. T. Gould, Diamond Court Apartments, heads the company.

The Lock Joint Pipe Co., 1123 Broadway, New York, has tentative plans for a branch plant at Atlanta, Ga., for the manufacture of reinforced-concrete pipe, to cost $50,000.

The Century Plainfield Rubber Co., Mosley, Va., has been chartered by M. B. Kennelley, H. McInerny and A. Grant Armstrong, Mosley, to manufacture automobile tires and other rubber products. The company is represented by Clifford V. Mannering, I. O. O. F. Building, Wilmington, Del.

Fire Oct. 24 destroyed a portion of the plant of the Belle Pre Glass Co., Alexandria, Va., with loss of $50,000.

The Virginia-Carolina Chemical Co., 11 South Twelfth Street, Richmond, Va., has plans for a fertilizer manufacturing plant at Baltimore, to cost $2,000,000, including machinery. S. D. Grenshaw is secretary.

The Williamson-Harris Machine Co., Cordele, Ga., will place an electric furnace in operation at its plant at an early date for the production of steel castings.

The Simmons Plating Works, Atlanta, Ga., metal-plated products, plans the erection of a two-story addition. Improvements will also be made in the present plant and new equipment installed.

The Duke Boltless Rail Joint Co., La Grange, Ga., has plans for a machine shop and foundry, for the manufacture of a boltless rail joint and other steel and iron products. G. W. Duke and J. C. Thomas, La Grange, head the company.

The plant of the Isaac A. Sheppard Co., stoves, Baltimore, has been sold by receivers to the S. B. Sexton Stove & Mfg. Co., Baltimore, for $101,000.

A permit has been granted Lyon, Conklin & Co., Baltimore, roofing, heaters, etc., for the erection of a factory, warehouse, offices, etc., to cost $75,000.

Riggs, Distler & Stringer, Inc., 216 North Calvert Street, Baltimore, has been awarded contracts for a power plant, heating and ventilating systems, etc., for School No. 174, Washington, D. C., for $240,000 and for underground electrical construction at the Charleston Navy Yard at $89,000.

Indiana

INDIANAPOLIS, Oct. 31.

The Durant Motor Co. of Indiana, Muncie, Ind., has been incorporated at $3,000,000, as a subsidiary of Durant Motors, Inc., 1819 Broadway, New York. The company recently acquired the local plant of the Sheridan Motor Co., a subsidiary of the General Motors, and will make changes at the works, with the installation of new equipment, for the manufacture of six-cylinder motor cars. The officers are W. C. Durant, D. A. Burke, C. O. Mininger and T. W. Warner.

The Interstate Public Service Co., Shelbyville, Ind., is arranging the purchase of the Hydro-Electric Co., Connersville, Ind., with local power plant, and will merge it with its lines. Connection will be made with the New Castle plant of the Interstate company, which plans for a number of additions and improvements.

The Zahner-Fowler Co., Laporte, Ind., has been incorporated at $225,000 by E. J. Zahner, G. H. Ashbrook and J. V. Garbett, Laporte, to manufacture metal products.

The Dusenberg Automobile & Motors Co., Indianapolis, operating a local plant for the manufacture of automobile motors, has been incorporated at $5,000,000.

E. E. Dean, head of E. E. Dean & Co., Lemcke Annex, Indianapolis, is negotiating for the purchase of the municipal electric power plant at Mitchell, Ind., for $45,000. It is proposed to operate the plant as a private enterprise, making a number of improvements.

The Gulf States

BIRMINGHAM, Oct. 31.

The St. Louis, Brownsville & Mexico Railroad Co., Houston, Tex., plans to rebuild its shops at Kingsville, Tex., recently destroyed by fire.

The Missouri, Kansas & Texas Railroad Co., Dallas, Tex., has broken ground for a machine shop, 30 x 50 ft., at Houston, Tex.

Fire Oct. 21 destroyed the electrically operated cotton ginning plant of H. C. Noel, Rice (Navarro County), Tex., with loss of $32,000.

The Texas Central Power Co., San Antonio, Tex., recently organized, plans the operation of electric power plants for service at Victoria, Cuero, Bishop, Kingsville and other points in this section. Plans will be prepared at an early date. R. W. Morrison, San Antonio, heads the company.

The McWane Pipe Co., Birmingham, Ala., recently organized by J. R. McWane, head of the American Cast Iron Pipe Co., Birmingham, and associates, has leased property at North Birmingham, and pending the construction of a new plant at a future date, as now proposed, the property will be used for the manufacture of iron pipe, special joints, etc. Mr. McWane has resigned as president of the American company, effective Jan. 1, to become president of the new company, and will retain an interest in the first noted organization.

The Gadsden Clay Products Co., Gadsden, Ala., has perfected plans for additions to its plant, to be equipped for pressed brick manufacture.

The Texas Interurban Railway Co., Dallas, Tex., is completing plans for the power equipment installation on its new line from Dallas to Terrell, and will award the contract for the machinery at an early date. The cost will be $1,600,000.

A portion of the plant of the National Forge Co., Anniston, Ala., was destroyed by fire Oct. 17, with loss of $40,000, including equipment.

The Denny Pottery Co., Denny, near Kosse, Tex., recently organized, has acquired a local building and plans for the installation of machinery for the manufacture of fire brick and other refractory products, sewer pipe, etc. J. W. Pringle is president, and John Lyons, secretary.

The Waco Refining Co., Waco, Tex., plans enlargements in its oil refinery at East Waco. New machinery will be installed. W. A. Rogers is head.

The Beindorf Machine & Supply Co., Kissimmee, Fla., plans the establishment of a new machine shop. Paul Beindorf heads the company.

The Fort Pierce Lumber Co., Fort Pierce, Fla., recently organized, plans the construction of a one-story planing mill in conjunction with a new saw mill, now being erected. Julius Frere is manager.

A complete machine shop for parts manufacture and general repair work will be installed in the new service building to be erected by the Dixon-Buick Co., 119 South Poinsettia Street, West Palm Beach, Fla., 75 x 125 ft., to cost $38,000. E. A. Allen is manager.

The Ross-Wilson Motor Co., Dallas, Tex., plans to rebuild its works, destroyed by fire with loss of $90,000, including equipment.

Milwaukee

MILWAUKEE, Oct. 31.

Informal estimates made by representative machine tool dealers indicate that business in October exceeded that of September by a small percentage. Enlargement of the scope of inquiry is believed to augur well for further increase in buying activity in November and December. Prospects for a moderate call from railroads and manufacturers of railroad equipment are believed to be better than for many months past, especially in view of the fact that the proposed strike was averted.

The Allis-Chalmers Mfg. Co., Milwaukee, has been awarded one of the largest individual contracts for pumping engines ever placed by any municipality. It is from the city of Milwaukee and calls for one 25,000,000 and two 22,000,000 gal. vertical triple expansion, crank and flywheel type of engines, with auxiliaries, for installation in the new Riverside pumping station of the municipal water works system. The price is $641,500. Bids closed Oct. 24.

The Union Mfg. Co., Oconto Falls, Wis., which is the hydroelectric power division of the Continental Paper & Bag Mills of New York, and serves the paper mills at Oconto and Marinette, Wis., will start work shortly on additions to increase the capacity from 1500 hp. to approximately 2750 hp., according to official statements from the headquarters. Details of the improvement are now being completed.

The K. O. Muehlberg Co., Manitowoc, Wis., has been incorporated with a capital stock of $60,000 to take over and develop the business of Karl O. Muehlberg, Sr., manufacturer of boring and reaming tools for automotive shops. A new machine shop estimated to cost $45,000 with equipment will be erected during the winter. Considerable new machinery will be purchased. The incorporators, who are the principal stockholders and officers, are Karl O. Muehlberg, Sr., Michael W. Mrotek and Karl O. Muehlberg, Jr., all of Manitowoc.

The Valley Paper Mills Co., Neenah, Wis., incorporated several months ago with a capital stock of $1,000,000, expects to let contracts by Dec. 1 for the construction and equipment of a new plant estimated to cost $800,000. The main mill will be 80 x 660 ft., two and three stories, with a separate power plant, of the hydroelectric type with steam auxiliary. A filtration plant also will be installed. E. A. Wettengel, architect, Appleton, Wis., is designing the plant. George W. Burnside, Neenah, is secretary and general manager.

The Creamery Package Mfg. Co., 61 West Kinzie Street, Chicago, and Fort Atkinson, Wis., has engaged Martin Tullgren & Sons, architects, 425 East Water Street, Milwaukee, to design a new factory and warehouse, 95 x 168 ft., three stories and basement, fireproof, on Colfax Avenue, in St. Paul, Minn. It will cost about $120,000 and be equipped largely for assembling and distribution. Work will start about Dec. 1.

Pauly & Marx, Inc., 2530 North Avenue, Milwaukee, have awarded principal contracts for a new public garage, sales and service building at North Avenue and Twenty-fourth Street, to cost $45,000. It will require 100 tons of structural steel, to be fabricated and erected by the Milwaukee Bridge Co. Shop equipment and fixtures are now being purchased.

The P. & J. Motor Co., Cudahy, Wis., has been incorporated with a capital stock of $250,000 to engage in the manufacture of a new design of three-cylinder air-cooled rotary internal combustion engine perfected by A. H. Peglow and L. E. Joslin of Cudahy. It has purchased the former Kerlin machine shop property at Squire Avenue and the C. & N. W. R. R. tracks in Cudahy and will spend about

$50,000 in building additions and purchasing additional equipment. Officers are: President, Dr. B. F. Palmer; vice-president, George C. Dutcher; secretary, Albert Dretzka; treasurer, John Rutkowski.

The Michler & Zastrow Welding Co., 51 West Second Street, Fond du Lac, Wis., has been dissolved. Otto F. Michler will continue the business, Albert Zastrow retiring. Mr. Zastrow is establishing a machine and forge shop at 193 Military Street and will install oxy-acetylene welding and cutting apparatus.

The Milwaukee Washing Machine Co., Clinton, Wis., has been incorporated with a capital stock of $50,000 to manufacture manual and motor-driven washing machines. It has purchased the former plant of the Clinton Creamery Supply Co. at Clinton and will retool it for metal and wood-working processes. The incorporators are A. Tlich, C. E. Riemer and Walter Erni, 3928 Vliet Street, Milwaukee.

The General Devices Corporation, New Lisbon, Wis., organized several months ago to manufacture automotive accessories and equipment, will build a one-story brick and concrete factory, 76 x 146 ft., estimated to cost $50,000 with equipment. The company will purchase electric current but will install a boiler house. F. W. Bolzendahl is president and general manager.

The Northern Furniture Co., Sheboygan, Wis., has let the general contract to Frank Geib & Co., 1439 South Ninth Street, local, for the construction of a four-story factory, 100 ft. sq., at South Water Street and New Jersey Avenue. It will be of brick and concrete, with metal sash, fire doors, etc. The cost, including new equipment now being purchased, is estimated at $150,000. Edward Hammett is general manager.

The Fire & Police Alarm Post Co. of Milwaukee, incorporated recently with $25,000 capital stock, will develop the manufacture of patented cast iron and steel posts for fire and police alarm telegraph systems, automatic traffic-handling devices and similar equipment designed by Hugo A. Kleinsteuber, assistant superintendent Milwaukee fire and police telegraph alarm division. Several hundred posts have been manufactured under contract and installed in Milwaukee in the past four years. It is planned to lease or build a factory and manufacture the devices for general municipal distribution. Peter J. Hayes is president; Leopold Weiland, vice-president; Charles J. Harder, secretary, and George J. Carroll, treasurer.

The Modern Auto Parts Grinding Co., Sheboygan, Wis., organized by Henry J. Sievers and Rance P. Loop, has opened a machine shop at 2303 South Eighth Street to handle general automotive repair work, such as grinding crankcases, machining small parts and special, close limit machine and die work. Both partners formerly were expert toolmakers for Dodge Bros., Detroit, and the Falls Motors Corporation, Sheboygan Falls, Wis. Immediate requirements of shop equipment have been filled.

Wilfred Schmidt, Ladysmith, Wis., is erecting a two-story shop building, 30 x 65 ft., to be equipped for general machine and automotive repair work.

The Manitowoc Ship Building Corporation, Manitowoc, Wis., has taken the contract to fabricate a new steel hull for the wooden tug J. H. Meyer, to be 99 ft. overall, with 22-ft. beam and 12 ft. 6 in. depth, designed for heavy duty service. The present machinery and equipment will be used in the new hull, but some replacement work will be necessary.

Jeffery Power, 916 Milwaukee Street, Madison, Wis., is negotiating for the lease of an existing factory building and will install machinery and equipment for the production of motor-driven laundry machinery for industrial and domestic purposes.

The A. H. Rusch Sons Co., Reedsville, Wis., has increased its capital stock from $25,000 to $50,000 and plans to enlarge its woodworking factory during the winter.

Capt. C. H. Hubbard, 424 Federal Building, Milwaukee, superintendent of lighthouses, is taking bids until Nov. 7 for miscellaneous equipment for the new lighthouse at Indiana Harbor, Ind. The items include a 4000-lb. electric derrick, steel construction tower, single drum hoists, 25-hp. gas engine, and a vapor heating system.

The Perfection Hoist & Engine Co., formerly of Milwaukee, has completed the transfer of its operation to Two Rivers, Wis., and is again in regular production on farm light and power units, mechanical hoists for dump trucks and similar appliances. It has purchased a number of tools and expects to place further orders from time to time as demands require.

The Industrial Equipment Co., Milwaukee, is a new corporation organized with $25,000 capital stock to manufacture, buy and sell machinery, tools and other equipment, supplies, etc. The incorporators are W. K. Walthers, A. L. Walthers and F. J. Walthers, 76 Cawker Building, Milwaukee.

W. E. Brooks, chief engineer, and M. R. Harrington, production manager, American Writing Paper Co., Holyoke, Mass., inspected a number of large paper mills in Wisconsin during the past week with a view of obtaining ideas concerning machinery and equipment for the retooling of several mills and new equipment of a new mill to be erected in the East.

The Milwaukee Press & Machinery Co., Milwaukee, now operating in leased quarters at 339-341 First Avenue, contemplates the erection of a new machine shop early in the coming spring. Details have not been completed.

The Wisconsin State Board of Control, M. J. Tappins, secretary, Madison, Wis., is taking bids until Nov. 21 for a new memorial hospital building to be erected on Lake Mendota at Madison at an estimated cost of $750,000. It will be of brick, steel and concrete, 184 x 258 ft., four stories and basement. Arthur Peabody, Madison, is State architect; J. G. D. Mack is State chief engineer.

Seattle

SEATTLE, Oct. 28.

The Central Coal & Coke Co., Kansas City, Mo., plans the construction of a lumber mill plant on property recently acquired from the Oregon-American Lumber Co., Portland, Ore., in the Nehalem district, totaling about 27,000 acres. Charles Keith is president.

Misener Brothers, Fossil, Ore., have completed plans for a one-story automobile repair works and service building, 30 x 70 ft., on a site adjoining their present plant.

The Lewis River Hydro-Electric Power Co., Vancouver, Wash., has plans for a hydroelectric generating plant on the North Fork of the Lewis River, near Kearns, Wash.

The Earl B. Staley Co., Seattle, Wash., recently organized, will operate a machine construction and repair works for automotive service at Tenth Avenue and East Madison Street.

Freight handling machinery, hoisting and conveying equipment, etc., will be installed at the new freight transit shed to be constructed on the water front by the Port Commission, Tacoma, Wash., to cost $500,000.

The Marcella Lumber Co., Cerec, near Chehalis, Wash., plans to rebuild its plant, recently destroyed by fire, with loss, including machinery, of $80,000.

The Central South

ST. LOUIS, Oct. 31.

The Republic Photographic Co., Kansas City, Mo., has acquired six acres at Ferguson, Mo., for a plant for the manufacture of sensitized papers for photographic service. Contract for the initial building has been awarded to the Gamble Construction Co., 620 Chestnut Street, St. Louis, to be one-story, 55 x 328 ft., and 77 x 160 ft., to cost $125,000, including machinery. E. B. Fish is president.

The Algermissen Co., Montgomery City, Mo., plans to rebuild its electric power plant, destroyed by fire. The company's ice plant was also partially destroyed. E. H. Algermissen is head.

The first unit of the new spiral pipe manufacturing plant to be erected at Leeds, Mo., by the Kansas City Spiral Pipe Co., 416 Dwight Building, Kansas City, Mo., will cost $75,000, and will be equipped for a capacity of 10,000 ft. of steel pipe per day. Special machinery will be constructed by the Wheatley Brothers Machinery Co., Kansas City. Erection will be commenced soon. E. J. Gordan is secretary.

The Grant Motor Co., Felix and Ninth streets, St. Joseph, Mo., has plans for a one-story service and repair works 120 x 140 ft., at Tenth and Francis streets, to cost $50,000.

The Wichita Ice & Storage Co., Wichita, Kan., has plans for a five-story ice manufacturing plant at 213 Rock Island Avenue, 75 x 90 ft., to cost $200,000. G. E. Wells, Boatman's Bank Building, St. Louis, is architect. C. W. Southward is president.

G. A. Wisdom, Joplin, Mo., plans a machine shop and foundry at Gravette, Ark., to cost $12,000.

The Little Rock Auto Tow Service Co., 115 West Twentieth Street, Little Rock, Ark., has completed plans for a two-story service and repair works, 50 x 100 ft. A complete machine department will be installed.

The Chester Iron & Foundry Co., 7800 Vulcan Street, St. Louis, has awarded a contract to George Moeller, 3530 Itaska Avenue, for its one-story foundry, 45 x 120 ft., to cost $42,000.

The Fort Smith Body Co., Fort Smith, Ark., recently organized at $100,000, has acquired the property and business of the Johnson Commercial Body Co., and will operate

a local plant for the manufacture of automobile bodies. Benjamin B. Johnson is president and general manager.

The Wichita Visible Pump Co., 701 Gilbert Street, Wichita, Kan., will soon commence the erection of a plant for the manufacture of gasoline pumps, to cost $50,000. E. P. Hayes is head.

The Postal Equipment Co., Covington, Ky., has been incorporated at $1,000,000 by Harry W. Cordes, William Peters and Frederick A. Fisher, Covington, to manufacture machines for stamp cancellation and mail distribution. The company is represented by the Capital Trust Co., Dover, Del.

The White Pine Power & Light Co., White Pine, Tenn., plans the construction of an electric power plant, 60 x 60 ft. G. M. Felmet is head.

S. E. Thompson, city clerk, Anthony, Kan., will receive bids until 2 p. m., Nov. 10, for equipment for a municipal power plant including 250 hp. water-tube boiler; 300 kilowatt steam engine generating unit; jet condenser; triplex pump; spray pond equipment; and auxiliary equipment. Black & Veach, Kansas City, Mo., are consulting engineers.

The White Co., 3442 Lindell Street, St. Louis, is completing plans for a one-story automobile service and machine repair works at Laclede and Vanderventer streets, to cost $75,000. P. J. Bradshaw, International Life Building, is architect.

The Central Missouri Coal Mining Co., 314 Central Trust Building, Jefferson City, Mo., will install at its mining properties at Holts Summit, Mo., engines, boilers, pumps, conveying apparatus and other power equipment, to cost $75,000. John McManus is secretary and treasurer.

Canada

TORONTO, ONT., Oct. 29.

The outlook in the machinery and machine tool market is bright for the future. More activity is reported in the building trades, several large American manufacturers have announced their intention of locating industrial plants in the Dominion, and at the same time Canadian companies are being incorporated in increasing numbers. The demand for equipment for municipal works and for small tools is more active.

The Midwestern Tractor Wheel Co. has purchased 73 acres at Amherstburg, Ont., for a plant. The company is capitalized at $1,000,000. Cuddy & Cox, from whom the site was purchased, have been named vice-presidents.

F. A. Fisher, manager Enterprise Foundry Co., Sackville, N. B., has had plans prepared and will receive bids for a plant, to cost $9,000.

The Peck Rolling Mills, Montreal, Que., are equipping their plant to manufacture angle iron and similar structural shapes.

The Burrard Dry Dock Co., North Vancouver, B. C., recently incorporated, will build a drydock there, to cost $2,500,000.

The Canadian Tool Co. will establish a plant at Bridgeburg, Ont. At present the company is negotiating for a temporary factory, but later plans to construct its own plant.

The concentrating mill of the American Molybdenite Co. has started operation at Wilberforce, Ont. The first unit, which will turn out 200 tons a day, is now in operation. Later the capacity will be increased to 600 tons a day.

The Gary Motor Truck Corporation of Canada, Ltd., Toronto, Ont., has been incorporated at $4,500,000, by Arthur W. Holmstead, Arthur B. Mortimer, William Skelly and others as provisional directors. The company has secured premises on Pacific Avenue, Toronto, and is preparing to establish a plant there.

The Lewis Engineering Co., Ltd., Toronto, Ont., has been incorporated at $500,000 by Thomas N. Phelan, James E. Lawson, John E. Corcoran and others to acquire from the Lewis Draft Appliance Co., Chicago, the benefit of certain Canadian patents for improvements in draft appliances for locomotives, etc., and to manufacture and assemble equipment, machinery, etc.

The Durant Motor Co. of Canada, Ltd., has been incorporated with a capital stock of $2,000,000 by William C. Durant, Deal, N. J.; Charles F. Day, Bronxville, N. Y.; Henry F. Herbermann of New York and others of Toronto, to manufacture and sell automobiles, trucks, motor cars, etc.

The Carr Pattern & Tool Co., Hamilton, Ont., will move into larger premises at 108 Merrick Street about Nov. 1.

The Cyclone Fence Co. of Canada, Ltd., Hamilton, Ont., recently incorporated to manufacture ornamental and industrial wire and iron fencing, will establish a plant at Hamilton. The Canadian concern is a branch of the Cyclone Fence Co., Waukegan, Ill. A short term lease has been taken on a portion of the plant of the Canadian Cartridge Co. The parent company has built special automatic machines at its Waukegan plant for the equipment of the Hamilton, Ont., plant. Operations will start early in November. The Hamilton plant will employ over 100 and will be under the management of R. R. Reaume.

The Eugene F. Phillips Electrical Works, Ltd., Montreal, Que., capitalized at $3,600,000, will erect a plant at Brockville, Ont. Machinery will be transferred to it from the present plant at Mile End, near Montreal. The new plant will cost over $2,500,000. It will cover 15 acres and will consist of 11 units. The first erected will be the copper rolling mill, 125 x 375 ft.

The Garlock-Walker Machinery Co., Ltd., Toronto, Ont., has moved from 32 Front Street West to 163 Dufferin Street.

The Toronto office of the Independent Pneumatic Tool Co. has been moved from 32 Front Street West to 163 Dufferin Street and will remain in charge of William McRae.

The Aqua Electric Heater Co. of Canada, Ltd., St. Hyacinthe, Que., has been incorporated at $500,000 by Louis Augustin, Cornelio A. Morin and Wilfrid Girouard to manufacture electrical appliances, heaters, machinery, etc.

Springs & Auto Parts, Ltd., Toronto, Ont., has been incorporated at $50,000 by Angus C. Heighington, Cecil Finlayson and William J. Dash to manufacture motors, engines, machines, carbureters, etc.

The Burrard Dry Dock Co., Ltd., North Vancouver, B. C., has been incorporated at $1,000,000 by Clarence Wallace, John J. Coughlan and Robert C. Lennie to construct at Vancouver a floating drydock with machine shops.

The Triumph Motor Equipment Co., Ltd., Hamilton, Ont., has been incorporated at $250,000 by Harvey N. Bingham, Frederick J. Sweetlove and Herbert Embress to manufacture motor trucks, engines, parts, etc.

The Canadian Concrete Steel Co., Ltd., Montreal, Que., has been incorporated at $200,000 by Edmund P. D. Harris and Minnie Bradley to manufacture iron, steel, metals, and to carry on a general contracting and construction business.

The Sager Glass Corporation, Ltd., Toronto, Ont., has been incorporated at $500,000 by Arthur W. Holmsted, Arthur B. Mortimer and Leonard V. Sutton to manufacture glassware, etc.

The Peninsular Sugar Co. will erect a sugar plant at Chatham, Ont., to cost $1,000,000. The factory will be in operation in about a year and will have a capacity of 600 tons per day. The factory will be built and the machinery provided by A. Schoen, Detroit.

James Watson, Kincardine, Ont., plans an addition to his factory to cost $50,000, including equipment.

The general contract for the principal construction of the power plant at Great Falls, Man., to cost $5,500,000 for the Manitoba Power Co., Ltd., Winnipeg, Man., has been awarded to Fraser, Brace & Co., Ltd., 83 Craig Street West, Montreal, Que. Separate tenders will be called for machinery and equipment. F. H. Martin is engineer and F. J. Pratt is purchasing agent, both of whom are located in the Electric Railway Chambers, Winnipeg, Man.

The lumber mill of the Canada Lumber & Timber Co., Vancouver, B. C., was recently destroyed by fire with a loss of $100,000.

The Canadian Boat & Engine Exchange, Ltd., 43 Yonge Street, Toronto, Ont., is in the market for a 20- to 24-in. lathe.

A large match factory is being established in Pemproke, Ont., by British, Canadian and American interests. The factory buildings have been practically completed and the machinery is now being installed.

The addition to the Northwestern Elevator Co.'s plant at Fort William, Ont., will be completed next spring, and will be ready for operation by September. It will cost $700,000. Machinery valued at $180,000 will be installed.

The general contract for erecting a pumping station for Halifax, N. S., has been awarded to the Standard Construction Co., Metropole Building, Halifax.

The Chatham Crystal Ice Co., Chatham, Ont., contemplates the erection of an artificial ice plant there, to cost $50,000. J. W. Leighton, Bartlett Building, Windsor, Ont., is architect.

The Ontario Diamond Drilling Co., Sudbury, Ont., has been incorporated at $40,000 by Thomas H. Hale, Albert Carlson and George M. Miller to manufacture diamond drills, machinery, tools, etc.

The Eastern Townships Smelting & Refining Co., recently incorporated at $2,000,000, has secured options on a site at Sherbrooke, Que., where it proposes to start work soon on the construction of a smelting plant, which will specialize in copper and asbestos.

Stanley F. Jacob, R. R. No. 3, Tillsonburg, Ont., is asking for equipment, including a lathe and drill press.

The Spring Lock Mfg. Co., Belleville, Ont., is erecting a large addition and will install new equipment.

J. Birschall, formerly superintendent Columbus McKinnon Chain Co., and McKinnon Industries, Ltd., St. Catharines, Ont., has formed the United Chain & Mfg. Co., 114 Queenston Street, St. Catharines, Ont., to manufacture tire chains, automobile parts, etc.

California

SAN FRANCISCO, Oct. 27.

The Great Western Meter Co., 105 Montgomery Street, San Francisco, will erect a plant at Powell and Beaudry Streets, Emeryville, Cal., for the manufacture of gasoline and irrigation meters. The plant will cost $125,000.

Fire, Oct. 22, destroyed a portion of the plant of the Weaver Roof Co., 339-41 East Second Street, Los Angeles, roofing, with loss of $100,000, including equipment.

The W. P. Moran Co., 511 Central Building, Los Angeles, architect, has plans for a one-story automobile assembling plant at Vernon, near Los Angeles, 70 x 250 ft., to cost $75,000. The equipment will include a 70-ft. electric traveling crane.

Mechanical and electrical equipment will be installed in the one-story vocational shop building to be erected by the board of education, Berkeley, Cal., known as the "Edison Shop Building." It will cost about $50,000.

The Bay Belting Co., San Francisco, has acquired property at 520 Broadway, Oakland, Cal., and plans a plant for the manufacture of mechanical belting. E. W. Bosworth is president.

The State Highway Commission, Sacramento, Cal., has awarded a contract to M. E. Hopper & Son, Bacon Building, Oakland, Cal., for a machine shop and maintenance building for highway equipment service at Fourth Street and Thirty-fourth Avenue, to cost $56,800.

The Long Beach Petroleum Association, Long Beach, Cal., plans an oil refinery on a 12-acre site in the harbor district, recently acquired.

H. M. Seigler, 110 Sutter Street, San Francisco, has plans for a one-story machine shop at 55 North Geary Street, near West Palm Avenue. A feature of operations will comprise machine polishing work of various kinds.

The St. Louis Cornice Works, St. Louis, sheet metal products, heating and ventilating iron specialties, metal cornices, is arranging for the removal of its headquarters to Los Angeles, where an extensive plant will be operated. The change will be made about the first of the year. J. Herman is manager.

BOOK REVIEWS

Labor Maintenance. By Daniel Bloomfield. Pages, xvii, + 530, 5½ x 8½ in.; illustrations and diagrams 37. Published by the Ronald Press Co., New York.

The optional title given to this book is "A Practical Handbook of Employees' Service Work" and the main object of the book is to point the way to better methods in so-called "welfare work." Considerable space is first devoted to explaining and justifying the use of the word "service." The general dislike accorded to "welfare" is dwelt upon, and the difficulty of exactly defining the scope of employment department, labor department, personnel department, and industrial relations department. Included in this section is a discussion of the organizing of a service department, and the selection of, and qualifications for, a service manager.

After establishing the service department, the problems for it to handle, which this book treats with, are many and varied. There is the building up of a plant spirit and the training of the worker. On the matter of training, a survey of the methods employed in many representative plants is given. There is the problem of Americanization of the unassimilated foreign born. There is the worker's health with recommendations for the establishing and functioning of a health department. There is the matter of recreation, its need and methods. There is safety work, development of a suggestion system, establishment of an employees' restaurant, and the application of a plant newspaper or house organ.

All of these things just mentioned may be classified as matters having a rather direct bearing on the worker while at work and therefore routine problems of a service department. The remainder of the book is devoted to the larger problems, such as the one of housing and that of giving financial aid other than through direct earnings and bonuses. This latter is handled under the three heads of mutual benefit associations, group insurance, and profit sharing. In all of these, particularly profit sharing, surveys of representative plans now in use are given. The concluding chapter has to do with the community idea.

Six appendices are given touching on the explanation of labor turnover, estimating employment costs, sanitary standards, safety organization, the by-laws of the Dodge Mutual Relief Association, and the by-laws and forms of Cheney Brothers Benefit Association and pension regulation. E. C. R.

Personal Relations in Industry. By A. M. Simons. Pages, xi + 341, 5½ x 8½ in. Published by Ronald Press Co., New York.

The basic material for this book was developed, according to the author, through a period of years and originally for presentation to classes of the extension department of the University of Wisconsin. Evidently impressed by the teachings of such men as the late Frederick W. Taylor, the author has approached his subject from the angle of production as a result of proper personnel relations, an angle frequently lost sight of in works dealing with the labor problem.

Preceding a chapter dealing with the organization of a personnel department, a complete analysis of the problems of such a department is given. Commencing with a chapter on the changing viewpoint as regards such a department, chapters follow which treat with the job available, and the man available for it, how to interview him, give him both a mental and a trade test, introduce him into his new environment, how to interest him in management's problems, and how to train, transfer, promote or discharge him. All this naturally leads to a discussion of welfare work, wage relations including profit sharing, labor turnover in all its aspects and the drift toward a wide social control.

The remainder of the book is devoted to a study of democracy in industry. Such matters as joint management, collective bargaining, the Leitch plan, and others are discussed. The concluding chapters, one on union contributions in the matter of joint management in this country and the other on British experiments, are especially good. Throughout, the book is replete with quotations from various authorities on the subject of scientific management. E. C. R.

The shortage of coke in Austria, due to war conditions, rendered it necessary to seek a partial substitute for heating cupola furnaces, says London *Engineering*. The only promising material being oil, experiments were begun by building two burners, with the necessary air pipes, into a cupola furnace, without further alteration; and as the results exceeded expectations, the experiments were continued. The final results of the tests were considered to be highly satisfactory. The coke charge was reduced by 4 to 5 kg. with an oil consumption of 1 kg. per 100 kg. of iron charge, while the time required for a melt was reduced by 30 to 50 per cent. The temperature of the iron attained the highest requirements, and no increase of sulphur content occurred.

The name of the Bemis & Call Hardware & Tool Co., Springfield, Mass., wrenches, etc., has been changed to the Bemis & Call Co.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The quotations given below are for small lots, as sold from stores in New York City by merchants carrying stocks.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipment in carload lots from mills, these prices are given for their convenience.

On a number of articles the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

Iron and Soft Steel Bars and Shapes

	Per Lb.
Bars:	
Refined bars, base price	2.78c.
Swedish bars, base price	10.00c.
Soft steel bars, base price	2.78c.
Hoops, base price	3.88c.
Bands, base price	3.43c.
Beams and channels, angles and tees 3 in. x ¼ in. and larger, base	2.88c.
Channels, angles and tees under 3 in. x ¼ in., base	2.78c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	2.75c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	2.95c.
Toe calk, ½ x ⅜ in. and larger	3.45c.
Cold-rolled strip, soft and quarter hard	6.25c. to 7.25c.
Open-hearth spring steel	4.25c. to 6.00c.
Shafting and Screw Stock:	
Rounds	3.88c.
Squares, flats and hex	4.38c.
Standard cast steel, base price	14.00c.
Extra cast steel	17.00c.
Special cast steel	22.00c.

Tank Plates—Steel

¼ in. and heavier	2.88c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.53c.
No. 12	3.58c.
No. 14	3.63c.
No. 16	3.73c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet, Per Lb.
Nos. 18 to 20	3.80c. to 4.05c.	.....
Nos. 22 and 24	3.85c. to 4.10c.	4.50c.
No. 26	3.90c. to 4.15c.	4.55c.
No. 28	4.00c. to 4.25c.	4.65c.
No. 30	4.25c. to 4.50c.	.....

No. 28, 36 in. wide, 10c. higher.

Galvanized

	Per lb.
No. 14	4.10c. to 4.35c.
No. 16	4.25c. to 4.50c.
Nos. 18 and 20	4.40c. to 4.65c.
Nos. 22 and 24	4.55c. to 4.80c.
No. 26	4.70c. to 4.95c.
No. 27	4.85c. to 5.10c.
No. 28	5.00c. to 5.25c.
No. 30	5.50c. to 5.75c.

No. 28, 36 in. wide, 20c. higher.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt...	—55	—40	¾ in. Butt...	—30	—13
¾ in. Butt...	—60	—46	1-1½-in. Butt.	—32	—15
1-3 in. Butt..	—62	—49	2 in. Lap.....	—27	—10
3½-6 in. Lap.	—59	—45	2½-6 in. Lap.	—30	—15
7-8 in. Lap...	—55	—41	7-12 in. Lap...	—23	— 7
9-12 in. Lap..	—54	—40			

Steel Wire

BASED PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	4.00c.
Annealed soft	4.00c.
Galvanized annealed	4.75c.
Coppered basic	4.50c.
Tinned soft Bessemer	6.00c.

*Regular extras for lighter gages.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	16¼c. to 19¼c.
High brass wire	17¼c. to 21¾c.
Brass rod	14¼c. to 20¾c.
Brass tube, brazed	27½c. to 31½c.
Brass tube, seamless	19 c. to 20½c.
Copper tube, seamless	20½c. to 22¾c.

Copper Sheets

Sheet copper, hot rolled, 24 oz., 20½c. to 23½c. per lb. base.

Cold rolled, 14 oz. and heavier, 2c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14-20		
			Primes	Wasters
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	80 lb...	$6.80	$6.55
		90 lb...	6.90	6.65
		100 lb...	7.00	6.75
IC..	$10.75	$9.25	IC...	7.15	6.90
IX..	12.00	10.75	IX...	8.15	7.90
IXX..	13.75	12.25	IXX...	9.15	8.90
IXXX..	15.50	14.00	IXXX...	10.15	9.90
IXXXX..	17.00	15.75	IXXXX...	11.15	10.90

Terne Plates

8-lb. Coating 14 x 20

100 lb.	$7.50
IC	7.75
IX	8.00
Fire door stock	10.50

Tin

Straits, pig	31c.
Bar	38c. to 40c.

Copper

Lake ingot	15½c.
Electrolytic	15¼c.
Casting	15c.

Spelter and Sheet Zinc

Western spelter	6½c. to 7c.
Sheet zinc, No. 9 base, casks	11½c. open 12c.

Lead and Solder*

American pig lead	5¾c. to 6¼c.
Bar lead	6¾c. to 7c.
Solder, ½ and ½ guaranteed	21½c.
No. 1 solder	19½c.
Refined solder	16c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb	80c.
Commercial grade, per lb	40c.
Grade D, per lb	35c.

Antimony

Asiatic	6½c. to 6¾c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb	29c. to 31c.

Old Metals

The market continues quiet with a tendency to hold stocks for higher prices. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy and crucible	10.25
Copper, heavy and wire	9.75
Copper, light and bottoms	8.00
Brass, heavy	5.00
Brass, light	4.00
Heavy machine composition	7.50
No. 1 yellow brass turnings	4.75
No. 1 red brass or composition turnings	6.50
Lead, heavy	3.75
Lead, tea	2.50
Zinc	2.25